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ABSTRACT

This theme issue focuses on the development of telephone-based videotex systems that use television sets and the telephone with the addition of a simple keyboard to access banks of information available on computers and to receive information in print on the television screen. A series of articles are included on Prestel, a telephone-based videotex service in operation in the United Kingdom; the role of the United Kingdom Post Office as the Prestel carrier; the different ways in which information providers are using the medium; plans for videotex in Canada, France, Japan, and Germany; a chart of the national videotex system; and standardization and regulation of this new media. Possibilities for the future development and uses of videotex systems, also referred to as viewdata, teletext, videotext, and Text-TV, are discussed. (MKM)

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Videotex: Words on the TV Screen

Viewdata, Teletext and the rest

Portugal TV Crisis
European Satellites
Tanzania's News Agency
Children-to-Children

CS007967

Portugal Faces Crisis of TV and Radio

PORTUGAL'S state broadcasting organisation has acknowleded a severe financial and administrative crisis. According to the minister of 'social communication', Radiodifusao Portuguesa (RDP) has been forced to sack about 150 of its 2,500 employees and split off its third and fourth radio services into a new separate and independent organisation.

RDP is financed by advertisements and the licence fee. But neither monies come near to paying for its many different enterprises.

One reason for the shortfall is that the licence fees are supposed to be collected by Portugal's 212 regional electricity companies. But some companies refuse to collect the fees; while others are extremely lax about it. The advertising revenue is not much better. Rates were fixed in 1976, since when costs have risen sharply.

The organisation has always been widely diversified. It runs a farm and a fishing company, and has a major share in a recording company. All are reported to be making losses. RDP now wants to shed some of its commitments, including its three orchestras, and to divest itself of its overseas short-wave services.

The overall debt of RDP is estimated to be about 1,600 million escudos (£16 million) reaching 2,500 million by the end of the year. The monthly salaries of the staff are reported to be beyond the organisation's current resources.

At the same time, a private company, Independent Radio and Television (RTI), has renewed its proposals to set up a network of radio and TV stations. Its plan for radio seems likely to be accepted, but private TV stations are forbidden under Portugal's new constitution. RTI is attempting to avoid this restriction by forming itself as a cooperative society, which would be allowed to broadcast TV services.

RTI is also discussing with the regional governments of Azores and Madeira the possibility of broadcasting in these islands. Throughout all its proposals, RTI's main point is that whereas RDP is inefficient and a drain on public money its own operations would be self-supporting and with better quality pictures and programmes. However, RDP is very unlikely to be dissolved completely. Most Portuguese envisage a mix of public and private services.

InterMedia

'InterMedia' is being re-designed, by Alan Kitching. In this issue, we introduce the new logo. It consists of the letters, 'Inter', as before, in the avant garde type face which was designed by Herb Lubalin in the early 1970s; and the letters, 'Media', based on one of the type faces collected by John Fell (1625-1686), Vice Chancellor of Oxford University, and Bishop of Oxford. The two faces, over 300 years apart, are classic designs of their times.

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Three New USA Communication Bills

THREE NEW bills on communications have been introduced in the US Congress. They all follow the first re-write bill of the 1934 Communications Act, introduced last June by Lionel van Deerlin, Chairman, House Sub-Committee on Communications.

Lionel van Deerlin's second draft (which, like the first, has been jointly sponsored by Democrats and Republicans) would abolish the Federal Communications Commission and stop the regulation of large areas of communications. The FCC would be replaced by a new body, the Communications Regulatory Commission.

All telecommunication carriers except AT&T would be immediately de-regulated and lose their monopolies and special privileges. After ten years, AT&T would be de-regulated likewise, and all telecommunications would be in open competition.

A spectrum fee would be charged on all broadcast users. Broadcasters would have to pay 0.25% of their annual revenue if they earn under $1 million, rising to 10% if they earn over $10 million.

Two separate bills have been introduced in the Senate by Ernest Hollings, a Democrat, and Barry Goldwater, a Republican. Senator Hollings is chairman of the Senate Communications Sub-Committee. His bill, No. S-611, would also impose spectrum fees on users. TV stations would be licensed for five years, with a random 5% being audited every year. Radio stations would have "indefinite" licences. The FCC would continue to exist, and would even increase its regulation of cable. A new National Commission on Spectrum Management, involving both government and industry, would try to ensure the spectrum was being used fully, efficiently and democratically.

Bill No. S-622, sponsored by Barry Goldwater, would de-regulate even more radio and some television. Competitive applications for new licences would be decided by lottery.

The three bills share many themes and proposals, although each has a few principles that are very much idiosyncratic. The Hollings bill, for instance, would repeal the 1962 Communications Satellite Act, with the result that Comsat would lose its federal regulatory status and no longer be able to sell satellite capacity.

Each bill is now subject to several months of hearings.

France, W Germany Move Towards National Satellites

BOTH FRANCE and West Germany are moving rapidly towards final decisions to set up their own national satellite systems for communications. France has already decided to start a business service of data, voice, etc, and may launch a direct broadcasting satellite; while West Germany is developing an even more advanced system of direct broadcasting.

A decision by either country to adopt a satellite system for direct broadcasting will not only affect its own domestic communications but will change the plans of all European countries, both separately and in their regional association, the European Space Agency. Both governments are talking to each other, and with Italy as a potential partner, and with the ESA.

In both countries the pressure for fast action has come from the aerospace manufacturers. To varying degrees, the national telecommunication authorities are also keen. They look to satellites to provide a greatly increased capacity, and at lower costs, than could the expansion of existing terrestrial networks.

The broadcasters, in contrast, are not so keen — at least, in West Germany — because they are not looking for more capacity and, anyway, their costs and revenues are not so directly related to transmission times. An exception is the Compagnie Luxembourgeoise de Télédiffusion (CLT), which is very interested in the possibility of supplying a European-wide TV service, financed by advertising.

The managements of CLT and Télédiffusion de France, the French state transmission agency, are considering a plan whereby CLT would lease two of the five channels on a TDF satellite. (Under a 1977 Geneva treaty, similar to that which recently re-allocated medium and long-wave frequencies, all European countries have agreed to have five national TV satellite channels).

The main thrust for the West German satellite has come from Messerschmitt-Bolkow-Blohm (MBB), the country's leading aerospace manufacturer. MBB's TV-Sat would operate in the 12/14 GHz band and provide, in the first two years, 1981-3, three TV channels (one for each German network) and 16 radio channels. After 1983 a five-year operational phase would probably provide another TV channel.

Once the satellite is operational, the Bundespost (which is responsible for the transmission of TV/radio programmes) could dispense with most of its terrestrial network of 3,000 transmitters, which now costs about £100 million a year to run. The satellite's running costs are estimated to be about £20 million a year.

A major snag, of course, is that each TV set owner will have to buy a special antenna and frequency converter at about £150 a piece, whose estimated cost for the entire country is about £700 million.

The French plans are rather different. Various governmental agencies have been looking at the options for over two years. Recently, an interministerial committee has been collecting reports and submissions on both a direct broacast satellite and a general telecommunications satellite.

One report by the Haut Conseil de L'Audiovisuel strongly recommended the launching of two separate satellites, Telecom 1 (as proposed by the Director General of Telecommunications), and Telediffusion to provide TV/radio.

The interministerial committee has now approved in principle a plan for two Telecom satellites to be launched in 1982/3. The Telecom satellites would be smaller and lighter than Germany's TV-Sat. They would provide a general business service rather similar to that provided by IBM's SBS project in the USA. The satellites' main services would be data, facsimile and videotex, with some telephone/telex capacity.

Of the other European countries only the Italians are seriously investigating the possibility of a national communications satellite. The Aerospaziale consortium is working on an advanced telecommunications system and on a direct broadcast satellite. Both projects would be arranged on a national basis, through the ESA, with NASA, or bilaterally with Germany or France. The government is currently formulating a five year plan which will decide which option to take.

An important factor in all these activities is the role of the ESA. Of the agency's numerous projects, two are crucial for future communication developments. The first is the agency's Ariane launcher, which has been designed by the French Centre Nationale d'Etudes Spatiales (CNES), the national space agency, which is also closely involved in France's national projects. The first Ariane is scheduled to be launched later this year, and the first operational flights should take place in 1981.

One of Ariane's payloads will be the first of another major ESA development, the European Communications Satellite (ECS) series. The ECS, of which four are planned, are the operational successors to the OTS which was launched last year. A third development should be mentioned, perhaps, in connection with ECS. The ESA is also planning a large, multiple-antenna communications satellite called H-Sat.

The main question, then, resolves around the relationship between the ESA and the national governments. If France or West Germany, ESA's two biggest contributors, decide to operate national systems outside the ESA the agency's plans would be seriously jeopardised.

There are other matters of cost, both to the operators and to the viewer, and of programmes. There has been little talk, so far, of what to use the satellite for. And virtually no work has been done to relate the possibilities of new services to national or European or any other needs.

UNESCO Backs Tanzania's News Agency

UNESCO has called for joint efforts by the Tanzania government and the United Nations Development Programme (UNDP) to develop the government-run Tanzania News Agency (Shihata) into an effective medium for communication. The call is contained in a 56-page report of a UNESCO consultancy team which has studied Shihata's operations and facilities since June last year. The report was prepared by two experts in news agencies, Godwin T. Amin and S. Haskover, appointed by UNESCO.

During its study tour of the country, the team sought views from various people including leaders of the national radio, and of the party and government-owned newspapers, and had a meeting with members of the Mass Media Sub-Committee of the Party Central Committee.

The consultants noted in their report that Shihata, with its present limited facilities, is hardly capable of effectively fulfilling the role and functions defined in the 1976 Tanzania News Agency Act. They add that neither is the agency likely to meet the expectations of the government and people of Tanzania in the foreseeable future without substantial aid in equipment, an extension of its communication links, intensive staff training, an increased volume of news output and the diversification of its services.

The implementation of these recommendations during a proposed Five-Year Shihata Development Plan (1979-1983) would shape the three-year-old institution into a full-scale national news agency capable of meeting its objectives within the shortest possible time, the report said.

The UNESCO consultants estimated that the execution of the programme within the plan will cost in the region of 47.5 million T.Shs. (£3 million). This amount will come from the Tanzania government and the UNDP.

The team supported the list of estimated equipment needs, entailing the expenditure of T.Shs. 606,300 (£37,500), that was submitted by Shihata's Director Hadji Konde to cover the first phase of the plan, from 1 January 1979 to 30 June 1981. The team also endorsed the director's plans for securing transport facilities at an estimated T.Shs. 3,097,200 (£193,500) through international assistance for the same period.

The consultants noted the pathetic state of transport facilities within the agency. Of the twenty regional centres on the Tanzania Mainland only Dodoma Region has a roadworthy vehicle — a four-year-old Land Rover. Under the plan Shihata will secure twenty Land Rovers, seven cars, nine motorcycles and 34 bicycles.

During the plan, it is anticipated that six experts will be attached to Shihata to help in upgrading its telecommunications and photographic services.

The consultants explained that during their tour of Tanzania's Mainland Regions they noticed a general awareness of the usefulness of close cooperation between reporters and leaders and media-minded people like teachers and other officials.

Among the restrictions imposed by Shihata on foreign journalists are that no-one other than itself, its agents or the holders of written authorisation issued by the agency, shall (1) collect or cause to be collected in Tanzania any news or news material for the purpose of dissemination; or (2) distribute or cause to be distributed, whether within or outside Tanzania, any news or news material intended for dissemination which is collected within Tanzania; or (3) distribute or cause to be distributed within Tanzania any news or news material intended for dissemination which is collected outside Tanzania.

The report is now being considered by the government and the media authorities. Its future depends on both the Tanzanian government and the UN agencies.

US Super Stations Serve Five Million

THE US 'super stations' which use satellites to distribute their programmes to distant cable networks, are now serving over five million homes, according to the National Cable Television Association. Over 900 Earth stations are involved.

The boom has led RCA (which plans a third satellite later this year and a fourth in 1981) to propose a bold scheme in which it would build, operate and maintain a $25,000 TV receive-only satellite station for each US commercial station without charge. The cost of supplying the package to 725 stations has been calculated at over $20 million. RCA would distribute programmes at varying fees according to the time of day and the number of stations that were involved.

RCA has said that its satellite service would be complementary to AT&T's terrestrial network. The satellite could offer only four channels, while AT&T can provide many times that. However, RCA's proposal would greatly affect the telephone companies, the networks (including RCA's own NBC) and the stations.

Latest cable figures in the USA (from 'Television Factbook') show 14.1 million homes to subscribe to cable TV (19.1% of all TV homes). The 3,997 systems reach an average of 3,328 subscribers. Broadcasters (30%) and print publishers (24%) are still the largest category of owners.

In Canada, broadcasters, cable companies and telephone companies in Canada may also own and operate receive-only satellite terminals under a new ruling by the federal Ministry of Communications. Hitherto, only Telesat Canada has been allowed to own and operate satellite terminals. The telephone companies are also to be allowed to operate transmit-and-receive stations to connect with the new Anik-C satellite which will be launched in 1981.

The new regulations allow Canadian TV stations to use satellites in Canada in the same way as the US super stations are using them south of the border. The Rogers Cable communications cable station in Toronto has already announced plans for a network of 15 cable companies, using 130 Earth stations.

Briefly

☐ New Zealand: All Change

New Zealand's two TV channels, previously run independently as TV One and TV Two (South Pacific Television), are to be merged. The new organisation, Television New Zealand, will provide common production and scheduling services. The main aim of the re-organisation is to lessen inter-channel competition and to provide complementary programming.

The change is best seen as the latest and possibly the last in the series of dramatic policy turnarounds in which successive National and Labour governments have pushed New Zealand broadcasting almost to the extreme of competition and then back to complementarity; once even briefly abolishing the New Zealand Broadcasting Corporation. The new structure does look as if it might remain for some time.

☐ Australia: More Hearings

Australia's second round of public hearings into specific commercial TV stations will not threaten the station's licences, according to Bruce Gyngell, chairman of the Australian Broadcasting Tribunal which conducted the hearings. Mr Gyngell also overruled a number of 'generalised' critical submissions which, he said, were not sufficiently specific about the stations under review.

The hearings, which started in Sydney on 13 March, followed the first round in Adelaide. The aim is to air the public's feelings and criticisms of commercial TV. The legal base of the hearings is unclear; which partly explains why the tribunal has had to say that they cannot affect the stations' licences. The tribunal intends to continue to hold more hearings over the next three years, until 1982, when the licences come up for renewal. But that schedule may be upset by government plans for new legislation.

☐ Asian Policies

Representatives of 23 Asian and Oceanic countries, including 16 government ministers, met in Kuala Lumpur in February for a UNESCO conference on communication policies. The seven-day conference adopted 51 recommendations, addressed either to UNESCO or to Asian and Oceanic governments. Several of the recommendations asked UNESCO to do more work in bringing together communications resources and development needs; and urged countries to become more self-reliant in communications (eg, in TV production). Not much progress was made, however, on the setting up of an Asian News Agency. The countries who were most interested could not agree on even the general principles.

Other recommendations asked UNESCO to "sponsor research into a participative model of communication, especially as to how feedback might be built into mass media structures" (No. 3); recommended "development journalism as a sound professional practice of journalism" (No. 6); asked UNESCO to support the training of journalists and the adoption of codes of conduct (passim); requested UNESCO to convene a meeting on an Asian news exchange (No. 35); asked for a "bank for films and video tapes for the region" (Nos. 39 and 44); requested lower telecommunication tariffs for the press (No. 40); requested UNESCO to study the imbalance of information in Asia and Oceania (No. 42); and requested UNESCO "to consult with interested organisations with a view to conducting a feasibility study for the establishment of a world press institute" (No. 51).

The meeting was the last in a series of regional preparations for a global conference.

☐ No Euro Radio

The plans for a European radio service have been shelved. The idea for the service to be transmitted by most EEC countries in English, French, German and Italian languages was first proposed by the BBC. But the French were never very keen and the EEC Commission and Parliament granted only £400,000 instead of the £700,000 that the scheme needed.

☐ New Atlantic Cable

A new Atlantic cable has been chosen over strong competition from satellite systems to cope with the next major expansion in transatlantic traffic. The decision by the US Federal Communications Commission to support the cable came after two years of intense negotiation between US, Canadian and European telecommunication authorities over the relative merits of cable and satellites. A majority of the various national authorities and other interested organisations had favoured the cable option for some time, but the FCC remained unconvinced until March, when it gave its agreement.

The TAT-7 cable will have a capacity of about 4,000 voice circuits, and cost about $100 million — more expensive than a satellite but, almost certainly, able to offer service for a far longer period. The likely completion date is 1983.

☐ New Compact Disc

An entirely new kind of audio disc has been developed by Philips engineers. It is known as a Compact Disc, and uses a four inch disc to produce one hour of stereo sound in a player that Philips calls 'consumer proof'. Its twin benefits of reliability and small size (making it suitable for playing both at home and in cars) have led Philips to claim it as a '21st century technology'. The disc revolves at varying speeds: at about 500 RPM when the pick up is at the disc's edge and about 250 RPM at the centre. Philips is now talking to other manufacturers about standards.

☐ Radio Demerara Sold

The Guyana government has bought Radio Demerara from the Rediffusion Group. The station's falling advertisement receipts had led Rediffusion to ask the government either to change certain national regulations or to buy the station. Nicholas Mellersh, Rediffusion's regional director, had said that, despite stringent economies, "there is and will be insufficient revenue to keep the company in operation as a separate entity." A new government committee will coordinate both the 30-year old Radio Demerara and Guyana's other radio station, the Guyana Broadcasting Service, which was nationalised in 1972.

Words on a Screen

THE HISTORY of communications usually turns on points of tension between inventions and institutions, between technological innovation and social context. The successful new technology will seek equilibrium; it may even produce it. This year is witness to the introduction of one new technological device which draws its strength precisely from its promise of equilibrium in each society in which it is being considered.

The device is videotex (or viewdata; we'll deal with the terminology later) whose promise of equilibrium is largely based on the twin factors that it uses very commonplace devices and systems to access and display vast quantities of information to the public. Its crucial point is that it is not so much a new technology as a new operation. Videotex has required some research and invention (mainly in the computer software) but its hallmark is not technological wizardry but social utility.

The excitement stems from the system's virtues in use. Prestel, the pioneer, does not incorporate the latest advances in computer technology; its terminals do not exploit microprocessors, for instance, although they might have made it more flexible and internationally acceptable. Prestel's advantages are rather that it is robust, simple, soon to be generally available and, almost certainly, soon to be fairly cheap. There have been delays, it is true; but only minor ones compared to the lengthy creakings in the development of video discs and cassettes, optic fibres and space platforms and other vanguard devices. Prestel's purpose is immediate equilibrium between supply and need, to a rare degree.

A videotex system uses familiar household devices (the TV set, the telephone) to manipulate computerised information. First, it exploits (mainly existing) computer technology to store and make accessible vast banks of information. Second, it uses everyday forms of transmission: either the public switched telecommunications network (the telephone network) or the broadcasters' TV transmissions. Third, it uses the TV set and the telephone to order, receive and display the information.

There are two main types of videotex. This 'InterMedia' survey looks only at telephone-based or interactive videotex, which is the more substantial. The user requires a special videotex set, and a telephone or special keypad.

He or she dials or pushes a button on a keypad to indicate whatever information he or she wants. The terminal then sends that order to the computer, via the telecommunication network; and the computer delivers the desired 'page' back over the same network. The whole operation takes about 1-2 seconds. The capacity of each service is theoretically infinite; in practice, it is limited by the size of the computer, by regulation, by cost, etc, and by the size of the screen. The first telephone-based videotex system was Prestel; others are Telidon (Canada), Bildschirmtext (West Germany), and Captain (Japan).

Although this survey deals only with telephone-based videotex, it is worth explaining the second type of videotex. The two are closely linked and, in several countries (notably France), are being developed in close conjunction. Both telephone-based and broadcast videotex look very similar on the screen, but the technical bases are very different.

Broadcast videotex is much simpler, and cheaper. The videotex signals are carried piggy-back on an ordinary TV signal, all the time, whether the user wished to receive them or not (without a special decoder, which obviously can be turned on or off: they are invisible). Thus, instead of large numbers of pages waiting in the central computer, as with telephone-based videotex, a much smaller number is continuously being transmitted in a fast unbroken cycle. The user taps on a keypad to indicate whatever page he wants; when that page next comes round in the cycle (it might take anything from a split second to over a minute) the terminal will 'grab' it, and display it on the screen.

Most broadcast systems use two 'spare' lines in the TV signal for videotex and so transmit about 400 pages (to transmit more pages would make the waiting time unacceptably long). The French, however, have plans to devote an entire TV channel to videotex with either 625 or 815

Videotex

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lines. Alongside France's Antiope, the leading broadcast videotex services are the BBC's Ceefax and ITV's Orac'e.

Is It a Mass Medium?

Will videotex be a mass medium or an individual medium; or, as the Japanese say, a mass individual medium? Will it be a mass medium in the beginning, and an individual medium in its mature years? Is there a substantial difference between telephone-based videotex and broadcast videotex? Is the difference the matter of the former's much greater capacity; or the matter of cost? Is it important whether the user's terminal is 'intelligent' in computer terms in the sense, for example, that the user can process information and communicate directly with other users, without going through the central computer?

To point answers to these questions, 'InterMedia' provides, first, a series of articles on Prestel, the only telephone-based videotex service in operation; then articles on plans in Canada, France, Japan and Germany; and then articles on national models, on standardisation and on the regulation of these new media.

Videotex's reliance on today's technology means that the people who make arguments and prophecies about its future do not need to be learned in technical matters. There is not the gulf, so impassable in such matters as space platforms, fibre optics, etc, between the scientists and engineers, on the one hand, and the businessman, regulators, lawyers, and the public, on the other. The debate is open to everyone. After all, a proposition to have a videotex service is not much different from the proposal to have another TV channel or a number of local radio stations; and everyone feels able to comment on these matters.

Perhaps there is one crucial difference. A videotex service is susceptible to being run in many more different ways than a straightforward programme service.

If the start of a new TV service can be likened to the opening of a new motorway (more of the same), then the launch of Prestel or of any national videotex system is more like the introduction of some entirely new vehicle or even the discovery of some new method of transportation (something completely different). The new vehicle would have to be defined, perforce, in terms of the old (as the first car was called a 'horseless carriage') before it established its own identity and accrued its own power. But that separate identity would soon come.

The interest in videotex is largely centred on this evolution of identity, of power, as each service grows and, it is to be hoped, edges towards equilibrium. The introduction of such a useful channel of information, and of so many new and diverse sources of information, affects the very arrangements of information, of power, in society. If Prestel, say, is even half the service that the Post Office proclaims it will be, then those displacements of power will be very great indeed.

This 'InterMedia' survey of videotex attempts to describe the current activities and trends in the videotex business in a way that these shifts of media can be better understood. ■

— The Editor.

What's in a Name

THIS YEAR is definitely the year of videotex. And of viewdata and teletext, and of Videotext, Text-TV and Prestel; and of the rest of the large and sprawling family. The terminology of — whatever it is — has always been confusing. In one sense, names don't matter (except in legal or technical specifications). For most people, services and functions are more important, more interesting. But it may be useful, at least, to explain why there is such dissension. We can also explain why 'InterMedia' uses the names that it does.

When the UK Post Office developed its Viewdata system, and the BBC and IBA developed their separate teletext systems, not surprisingly they regarded these names as prime candidates for international standards.

But problems arose. The French (and French-speaking Canadians) had difficulty with the word, 'Viewdata'. And several countries found 'teletext' too close to the West German's planned 'Teletex', and the USA's existing 'Teltex', both of which are text communication systems.

Fortunately, there is in communications, as in other fields, a range of international bodies to sort out such problems. The International Telecommunication Union has taken the lead, in collaboration with the European Broadcasting Union and other organisations. (A full article on standardisation may be found on page 48; here we are dealing only with names).

The ITU's two senior consultative committees on radio (CCIR) and on the telegraph and telephone (CCITT) both began to include the problems on their agendas. To explain the workings of the ITU's various parts would be bothersome; it is notoriously diffuse and complicated. But one particular committee, Study Group I's Videotex Working Party, is worth a mention. The committee meets only seldom but has produced a draft set of terms.

It has chosen Videotex for the generic name; it distinguishes, next, between interactive Videotex and broadcast Videotex; and then it has the brand names. The UK Post Office, however, has rejected this approach; it prefers a two-tier set: viewdata or teletext; and Prestel, etc.

From any angle, videotex is not an attractive word. It does not relate obviously to its neighbours of television or the telephone. And the CCITT distinction between interactive and broadcast videotex depends upon a clear understanding of the nature of interactivity — which doesn't exist. Nevertheless, the CCITT committee has reached an agreement, and stayed with it.

'InterMedia' has chosen a style that is based on the CCITT's. We use videotex (without a capital V); then telephone-based videotex or broadcast videotex; and then the brand names. We do not capitalise videotex because we do not capitalise the press or broadcasting or the cinema. ■

A Chart of National Videotex Systems

COUNTRY	SYSTEM	.... WHICH MEANS	TYPE	SOURCE	OPERATORS
Australia	wired teletext		videotex	Telecom Australia, 518 Little Bourke Street, Melbourne, Victoria 3000	
Australia	broadcast teletext		teletext	Australian Broadcasting Commission (ABC), 145 Elizabeth Street, Box 487, Sydney 2001	
Canada	Telidon	"at a distance" + "I saw/perceived/know" (Greek)	videotex	Department of Communications 150 Metcalfe Street, Ottawa KIA 0C8	Department of Communications
Canada	Vista		videotex	Bell Canada, 1050 Beaver Hall Hill, Montreal, Quebec H3C 3G4	Bell Canada; IPs: Torstar Corporation (owner of Toronto Star) and Southam Press
Finland	Telset		videotex	Ministry of Posts and Telecommunications, PO Box 528, SF 00101, Helsinki 10	The Ministry, with Sanoma Publishing and Oy Nokia
France	Tictac	Terminal Integré Comportant un Téléviseur et l'Appel au Clavier	videotex	Centre National d'Etudes de Télécommunications (CNET), 8 Avenue Jean Jaures, 92130 Issy-les-Moulineaux	Ministère des Postes et Telecommunications
France	Titan		(videotex)	Centre Commun d'Etudes de Télévision et Télécommunications (CCETT), 2 Rue de la Mabilais, BP 1266, 35013 Rennes Cedex	Télédiffusion de France, 21-27 Rue Barbès, 92120 Montrouge
France	Didon		(teletext)	CCETT	
France	Antiope	Acquisition Numerique et Télévisualisation d'Images Organisées en Pages d'Ecriture	(teletext)	CCETT	
Germany, FR	Bildschirmtext	"videoscreen texts"	videotex	Bundespost, Adenaueralle 81, 5300 Bonn 1	Bundespost
Germany, FR	Videotext		teletext	ARD, 8 Munchen 40, Leopoldstrasse 10	
Germany, FR	Videotext		teletext	ZDF, 6500 Mainz Postfach 40 40	
Germany, FR	Bildschirmzeitung	"screen newspaper"	teletext	BDZV, 53 Bonn-Bad Godesberg, Riemenschneiderstrasse 10	
Japan	CAPTAIN	Character and Pattern Telephone Access Information Network	videotex	Ministry of Posts and Telecommunications, 1-3-2 Kasumigaseki, Chiyoda-ku, Tokyo 100	Ministry, and Nippon Telegraph and Telephone (NTT)
Sweden	Text-TV		videotex	Sveriges Radio, S-10510 Stockholm	
UK	Prestel (originally Viewdata)		videotex	Post Office, Prestel Headquarters Telephone House, Temple Avenue, London EC4	Post Office, Prestel
UK	Ceefax	"see . . . facts"	teletext	BBC, Portland Place, London W1	
UK	ORACLE	Optional Reception of Announcements by Coded Line Electronics	teletext	IBA, 70 Brompton Road, London SW3	ITCA, Knighton House, 52-66 Mortimer Street, London W1
USA	Qube		videotex	Warner Cable, a subsidiary of Warner Communications, 75 Rockefeller Plaza, New York, NY 10019	Qube, Columbus, Ohio
USA	Closed Captioning		teletext	Public Broadcasting Service, 475 L'Enfant Plaza, S.W., Washington, DC 20024	
USA	teletext		teletext	Bonneville International Corporation, 36 South State Street, Suite 2100, Salt Lake City, Utah 84111	KSL—TV, 145 Social Hall Avenue, Utah 84111
USA	teletext		teletext	CBS, 51 West 52nd Street, New York, NY 10019	KMOX-TV, 1 Memorial Drive, St Louis 63102

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COMMENTS

Telecom Australia has set up a Wired Teletext Open Planning Working Party, which has proposed a feasibility study on videotex. It has not yet been accepted. Two publishers are also considering a videotex service; so are ATN-7 and TCN-9 in Sydney.

The ABC has been testing UK-type teletext for two years. However, it is concerned about the suitability of the UK standard for a country like Australia which uses VHF system B. The commercial TV networks (eg ATN-7 and TCN-9, Sydney) are also wanting to start very soon. But the Broadcasting Tribunal in an unexpected decision has forbidden further development. If the Tribunal does give the go-ahead, the ABC will initially install a major network teletext facility in Sydney and dedicate blocks of pages to other state capitals.

Developed by the DOC's Communications Research Centre and announced late 1978. There will be at least four field trials in 1979. One of the forerunners, remarkable for the quality of its graphics.

Bell Canada, the country's largest telephone system, is testing Vista, which is broadly similar to Prestel, in 25 households in Montreal, Ottawa and Toronto. A market trial will involve, 1,000 terminals in English and French, in 1980.

The Finnish PTT demonstrated Telset with the help of a publishing company and an electronics company, back in 1977. Telset has great (technical) potential and may prove a strong contender.

A simple, low-speed, system, which was developed by the PTT's CNET in the mid-seventies. Tictac has now given way to the family of systems listed below.

These three systems are really three aspects of the same development; Titan is a database, accessible through the telephone network; Didon is a packet-switched data network; and Antiope is a system of modified TV sets. The name Antiope is now being used to refer to the whole family. Three services are operating: Antiope-Bourse, with 300 pages in Paris and Lyon; Antiope-Meteo on Antenne-2, with 30 pages of weather information; and Antiope Agriculture.

The West German Bundespost was the first PTT to buy Prestel hardware and software from the UK Post Office. It calls its Prestel-derived service, 'Bildschirmtext'. A service trial is planned for 1980.

The first German TV channel (ARD), the 2nd TV channel (ZDF), and the BDZV all demonstrated teletext systems at the 1977 Berlin Radio Fair amidst controversy over who had the greater claim to run such a service. All three systems were well received. Further demonstrations are planned for this year's Fair. But neither the federal government nor the state (Land) government are close to a decision.

The Ministry started work in 1977, and a field trial will be held later this year in Tokyo.

Sveriges Radio is now carrying out a field trial with 200 terminals in the homes of deaf people.

The pioneer system. The Post Office opened the UK Prestel public service in March. It has sold viewdata software to West Germany, the Netherlands and Switzerland; is near agreement with Hong Kong; and is negotiating with numerous organisations. The INSAC marketing company, acting for the PO, has sold viewdata to VNU, a Dutch publishing company, and is talking to companies in the USA, etc.

The foremost broadcast videotex (teletext) service; the regular service started in 1974 and now transmits 400 pages on BBC1 and BBC2. The first regional centre will be set up in Manchester next year. Editorial outlook is strongly journalistic.

Oracle and Ceefax have developed in tandem; with Ceefax in the front seat. The Oracle service is rather more oriented to entertainment. The Oracle team is based in LWT; a separate unit in ITN produces news.

The most complex and capacious of current systems. The test service provides 30 channels, at varying prices and with different degrees of interactivity, including voting and polling.

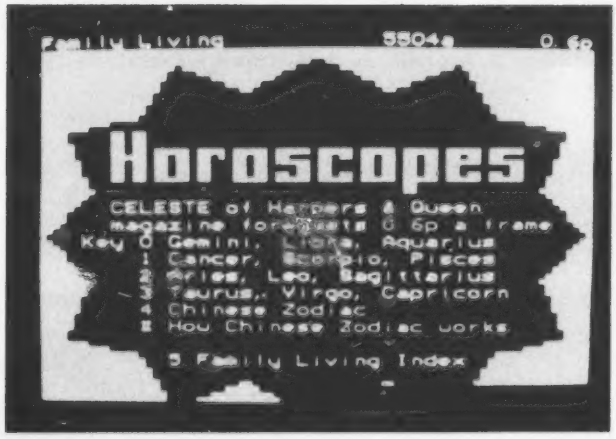
PBS has developed a system of captions that are closed (ie, hidden, and visible only after special decoding) to aid deaf people. The US Department of Health, Education and Welfare announced plans in March to provide closed captions on PBS and the ABC and NBC commercial stations by 1980 (CBS declined, saying it preferred straight teletext systems).

KSL (owned by Bonneville) started Ceefax experiments in June 1978; Bonneville has now asked the BBC for a two-year non-exclusive licence. Bonneville plans to develop Touch Tone Teletext, in which a few 'special' pages, accessed by telephone, are sent interleaved with the regular pages.

KMOX-TV started tests of Ceefax and Antiope in April.

Prestel is The First to Start

by Rex Winsbury and Martin Lane, Fintel



ON 27 MARCH the world's first videotex system the UK's Prestel, went public. The launch was modest, limited. Although going public might be expected to mean that anyone who owns or rents a TV terminal can be hooked into the system, only residential users (ie, not businesses) in London can actually connect to Prestel's services. The full public service for business as well as residential users, which will consist of two computers and a separate editing/updating computer (as against the single machine at present operating) is expected in about September, and then only in three other cities. But Prestel has taken its first step as a fully fledged system and during 1979 should emerge in full public view. This year is a critical time in Prestel's development, and in the development of all videotex systems.

There has been, it is true, an annoying but not fatal slippage against the original timetable. That timetable called for a market trial, involving 1,500 sets placed equally in selected business and residential premises, to last from June to December 1978, and for a public service to start in January 1979. In the event, the market trial did not really get going until about October 1978, and the delivery of the 1,500 sets, far from being completed by June 1978, may not be complete until mid-summer 1979, by which time the market trial will have overlapped with the beginning of the limited public service.

The annoying feature of this delay is that the market trial statistics, upon which Information Providers were relying to validate their ideas about what sorts of information might and might not be saleable through Prestel, are not now going to be available in anything like their intended form. So Prestel's public service will be its first real market test.

With that caveat, however, the Information Providers (of which Fintel is one) are confident that the UK Post Office will get the system working. The Post Office has exhibited both the will and the resources to do so and, in spite of the delays, there is no major issue between IPs and the Post Office on that score.

The main hiatus that has developed is between the system organisers (meaning the Post Office and the IPs) and the TV set manufacturers. The issue is the supply of Prestel terminals. There may be understandable reasons for this delay, such as the economics of both set and chip manufacture, and the need to have a reliable product before going to market. But the hope now is that the IPs, by demonstrating that they have information wares to sell, and the Post Office, by demonstrating that it has a videotex system that works and can take on customers, will coax manufacturers into proving the all-important terminals in the necessary quantities.

The History of Prestel

Prestel was first developed by the Post Office in 1970/1 under the name of Viewdata (the same name, with a capital 'V', was used for both the generic name and the brand name). The concept that led to its development was the notion of a 'universal database' which had been intriguing computer scientists ever since the computer was invented. The goal was a computer or computers on which all the information that a nation needs to operate economically, socially and culturally could be stored and accessed by everyone within that nation.

It should be added, perhaps, that the Post Office's ambitions were not entirely the intellectual goal of achieving the world's first universal database. It also, quite properly, wished to increase the usage of its telephone network. The UK has a relatively high penetration of telephone handsets, but a relatively low level of usage. Prestel, if successful, will increase usage, and revenue.

To make a database truly universal there are two prerequisites. The first is for a computer system that can efficiently store all kinds of data, and be accessed with high or low frequency and at reasonable cost. The second and complementary necessity is for a terminal that is reliable and cheap and, ideally, already distributed and in use throughout the population.

To meet the first requirement the Post Office chose the GEC 4080, generally acknowledged to be one of the most efficient communications computer systems in the world. It also devised a method of accessing the data that allows the computer to pinpoint data very quickly and, therefore, cheaply.

To meet the second requirement the Post Office decided to make a reality of another idea that had been mooted for some time. The notion was simple: to make the domestic television set into a computer terminal by adapting it and linking it with that other increasingly common bit of household hardware, the telephone. The TV manufacturers, anxiously looking for the next innovation and new market after colour TV, gave their support.

Once the hardware problem had been solved (in theory, at least), the Post Office needed the software, the information, to store in its system. Initially the Post Office saw itself as the 'editor' of Prestel (as Viewdata was re-named). Information Providers would submit information to the Post Office who would then be responsible for the quality and standards of the database.

It became apparent at a very early stage that it was not practical for one organisation — even one as large as the Post Office — to monitor and vet all the information on Prestel. Also, no potential IPs — many of them publishers in their own right — would accept that the Post Office had either the right or the ability to judge the quality of their information on Prestel.

So for a variety or practical and political reasons the Post Office then decided to adopt, as far as it legally could, a role as a 'common carrier'. This new policy means that the Post Office is responsible for the Prestel system and for ensuring that the user can access it. But each Information Provider is entirely responsible for the legality, accuracy and quality of its information. With this issue resolved, Information Providers began by joining Prestel in large numbers, and Prestel was on its way.

For its successful operation, therefore, Prestel depends on the coordinated activities of a large number of separate organisations. Following the pattern of a flow chart there are four main groups. The first is the Information Providers, who actually have the information. The second is the Post Office which has the computer which stores the information and the telephone lines that transmit the information to the user. Third are the TV set manufacturers (and other companies) who make the terminals by means of which the user gets the information. Fourth are the television rental companies who, in the UK, will be the main agencies by which the sets are actually placed in the home or office. Through it all, of course, it is the Information Providers who are trying to sell their product (ie, information) to the user. Thus the flow chart comes (to mix metaphors) full circle.

This chart may seem like that of commercial TV in the UK, with its flow from the ITV programme production companies to the Independent Broadcasting Authority, which operates the transmitters, to the TV set makers and renters, and to the users. But there are significant differences. Prestel already has more than 150 Information Providers against ITV's 15 programme companies; and the Post Office is seeking to act purely as a 'common carrier', rather than as an authority like the IBA which not only owns and administers the transmitters but regulates content.

An Information Warehouse

In other words, the Post Office computer network is to be regarded as an information warehouse in which the IPs rent space, and from which the users draw supplies of information. Within the space they rent, the IPs are free to place what information they wish, in whatever form they wish, subject only to the laws of the land. The Post Office has no editorial or supervisory role over the information itself, nor does it allocate any types of information to any particular IPs, exclusively or otherwise. It is an 'open house' database, within the limits of the computer space at any given time.

Apart from natural competition, there is nothing to stop different IPs from putting up the same information, provided copyright (another problem area) is not broken. Conversely, there is nothing to prevent Prestel from having big gaps in its total range of information; although one assumes that, as the system develops, new IPs will step in to fill any such gaps.

Because Prestel has no central editor or coordinator its information is basically categorised by IP, and not by subject, although there is a subject index superimposed upon the series of IP indexes. It is undeniable that some users find this arrangement confusing. It is an interesting conceptual problem whether Prestel should be seen as a single database in which the user knows in advance what type of information he will find; or whether it can be seen as a sort of electronic bookstall, where the user browses and may, or may not, find something that is interesting.

The IPs have developed a close relationship with the

Post Office through a series of committees that have considered questions of pricing, technical improvements, marketing and other matters. There is also an Association of Viewdata Information Providers which tries to coordinate IP attitudes. The IPs vary greatly; from those with 100 pages or fewer to those with over 5,000 pages. Inevitably, it is these bigger ones who dominate the dialogue with the Post Office.

Who are the IPs?

Given Prestel's 'open house' policy, a wide variety of organisations have now signed up with the Post Office as Information Providers. A crucial point is that only some of these are traditional publishers (of newspapers, magazines, books). Many are organisations who sense an opportunity to provide their information direct to the public for the first time — to *become* publishers. Others are writers or would-be writers who sense a new field in which to express themselves. Whether Prestel is a publishing medium for hard data or soft data or both (that is, for facts and figures, or for written text and literature, or both) the system throws the field open for all comers who have the necessary cash.

Thus, train timetables are supplied both by ABC 'Rail Guides', a private publisher, and by British Rail, the public authority that operates the train service. For advice on buying motor cars, we can turn to both commercial magazine publishers and the non-profit Consumers Association. For official statistics on, say, the retail price index, we find both Fintel, a financial publisher, and the government's Central Office of Information. For theatre reviews we have information supplied both by a magazine group which culls reviews from its normal publications and an independent journalist (or rather, him and his wife) writing direct for Prestel. Then there are banks, universities, retail groups, computer bureaux, tour and travel operators, airlines, research bureaux, libraries, and so on. The gamut of information is similarly large. It ranges over jokes and quizzes, classified advertisements, economic data, company information, timetables, price and shopping guides, share prices, credit card information, horoscopes, games and weather forecasts.

It is an open question whether Prestel is suitable for all or only some of these types of information. Will people read Prestel as they read a newspaper or pamphlet? Or is the glare of the TV screen such that the user will get dazzled quickly and will only pick out the figure, address, or time that he wants? Will people browse through Prestel, or parts of it, adding up their own personal 'information package' on, say, buying a new car; or will it be a quick in-and-out to find the availability of PanAm stand-by seats to New York tomorrow? Such are the questions that only experience will answer. But those answers will affect who stays on Prestel as an IP, who joins it in future, and what information they decide to put up (since editing material on or off the system is relatively easy and instantaneous).

Two special groups of IPs need to be mentioned. Some people are interested in a 'closed user group' (CUG) in which access to the information is restricted to a known group of people or organisations. The information in a CUG can be of a more sensitive, confidential, or expensive type, and the IP can if he wishes charge a simple annual subscription (or some other method of payment) for membership of the CUG rather than the normal page-by page tariff rates for the open public service. There is a view that videotex systems will find their widest application in closed user groups, either run off the same central computer or off an in-house machine.

The other special group of IPs are those who either cannot afford the basic Post Office fees for being on the system or who do not have sufficient material to warrant paying them. These IPs go to a larger, established IP and buy from him both computer space and design and keying services. The larger IPs are known as 'umbrella IPs' and they work on contract. The system therefore has room for both the very small IPs with a few tens of pages, and very large ones with 5,000 to 10,000 pages (or even more as the system develops).

The Structure of the Database

Prestel was conceived and designed as a system that, above all, would be simple to use. The method of accessing and searching the database had to be simple enough for everyone — whether in the office or the home — to understand and cope. And the search method had to be the same across the entire range of data held on the system. The method devised to meet these criteria was the 'search-by-numbers' or 'menu' method. Prestel information is stored on 'pages' containing up to 960 characters, each page having a unique numerical identity from 0 to 999,999,999. Each IP is given his own three digit master number. For instance, Fintel has 248, and all its pages 'queue down' from 248.

All information on Prestel can be accessed by the use of a keypad containing the ten digits 0 to 9 and two control functions. The user proceeds from page 0 through a series of pages provided by the Post Office, to guide him towards his area of interest, until he arrives at the pages of the relevant Information Provider(s). At each stage he progresses through a series of numbered choices. He makes one choice at a time out of a maximum of ten alternatives, each choice taking him to a new frame with another set of choices until, ultimately, he arrives at the information he requires.

The first problem the Prestel method poses for the Information Provider is how to direct the user to the information as efficiently as possible; how to 'route' the user quickly and precisely to his desired goal. This routeing structure is as important as the information itself in determining whether a particular IP's information will be looked at.

The IP must provide the user with as many different routes to his information as possible. For example, if the user is interested in one of the companies on the Fintel database he may search for it by name — and an alphabetical routeing structure must be provided — or he may search for it in its particular sector (ie, publishing, travel) and so a sector routeing structure must be provided. Once he has reached the company, he may want recent developments, or financial statistics, or comment and analysis; he may want the most recent information or historical

information; and so on. Each of these alternatives must be provided. Thus for every page of information on Prestel there is a substantial overhead of choice or routeing pages.

The second problem with this routeing method occurs when the user has reached the desired, the 'end', information. If we think of the journey from routeing to information as going 'down' the routeing structure, then how does the user get 'back up' so that he can obtain more information on perhaps very different topics? Again the only method available to the IP is to provide the user with a series of choices. These choices must be available to the user on the page that contains the information that he originally needed.

This constraint has two implications for the IP. First, on a page that is already restricted to 22 usable lines some considerable space — perhaps three lines — must be reserved for onward routeing instructions. Second, the IP must be able to guess where a user is likely to want to proceed after looking at a particular item. At Fintel this particular problem has caused a great deal of heart-searching and head-scratching. How can the IP cater for an almost endless variety of possible whims that may strike a user who wants more information? How much space on an information page can be devoted to further routeing before the basic information content of the page becomes too small to be of any use? How many pages of an IP's database can be reserved for routeing before the database becomes uneconomic? After all, it is the information pages that must generate sufficient income to pay for the cost of storing the routeing pages on the Post Office computer.

The Prestel database at the moment can contain a maximum of 250,000 pages, of which 200,000 can be used by Information Providers and the remaining 50,000 by the Post Office. Already more than 150,000 of these pages are in use. These numbers may seem very large, but it must be remembered that each Prestel page contains a maximum of only 150 words, or the equivalent of two paragraphs in a newspaper. And a large number of Prestel pages are routeing pages with no information content.

A Shortage of Space

In fact there is going to be a fairly acute shortage of space on Prestel for at least the next two years. Already there are more companies waiting to become IPs than there are existing IPs, and the existing IPs have indicated that they would book substantially more pages if any were available.

The reason for the shortage of space is that although there are expected to be about 20 computers in the Prestel network by the end of this year, capable of holding ten times 250,000 pages, each of these computers will hold exactly the same pages as the others. The reason for the duplication is that the Post Office wishes most of the UK to be within a local telephone call of a Prestel computer. The management problems of allowing each of these computers to hold different data, and of moving this data around the network, would be extremely complex. (Indeed it is the problem of updating the different computers even when they hold identical databases that has partly caused Prestel's public service to be delayed by 9 months). So for the time being the information is duplicated, and Prestel pages will remain a scarce resource. It may well be that a black-market in pages will develop.

So far, our discussion about Prestel's structure has been from the point of view of the database designers — the Post Office and the IPs. The Prestel user may perceive the system differently. The Post Office has written certain standards into the Prestel software to provide the user with consistent information regardless of whose database he accesses. These standards are (1) that the name of the IP must always appear in the top left hand corner of the screen on every page of that IP's database; (2) that the price of each page must appear in the top right hand corner; and (3) that the number of the page must appear in the centre of the top line of the screen. Apart from these rules the design and contents of the Prestel page is totally at the discretion of the IP.

To the user, the Prestel system is basically a series of routeing pages followed by information pages. The fact that part way through the routeing pages he moves from pages that have been designed by the Post Office to pages designed by IPs may not even be noticed by the user and of no interest to him. There is a strong school of thought that suggests that the subtle distinction between the Post Office as the common carrier and the IP as the editor will largely be lost on the user, and that he will perceive Prestel as purely a Post Office service.

We have already touched on the structural problem that arises from this confusion. An IP will presumably provide efficient routeing within his own database, but he will be reluctant to lose the user by directing him to databases provided by others. This territorial competition will mean that information of a similar or complementary type appearing on different databases will not be readily or easily accessible by the user. He will be forced to go through a lot more routeing pages than if the database structure were arranged in terms of content rather than in terms of IPs. Partly to answer this problem, Fintel is cross-referencing its data with other major business IPs, such as the London Stock Exchange.

These structural problems should prove minor relative to the overall simplicity and ease of use of the Prestel system. Most new users very quickly master the Prestel keypad and find their way around the database. Early evidence indicates that young children are particularly entranced by Prestel and quickly become expert users. The more one becomes involved in Prestel, the more one is convinced that the system really is a breakthrough. It really does make the computer and its database available and understandable to whole sectors of the population that otherwise would never contemplate using a normal computer terminal.

A Threefold Charge

The user of Prestel has to pay three separate charges. He has to pay the TV manufacturers, the Post Office, and the Information Provider. To buy a Prestel TV set now costs £1500; to hire one costs £30 per month.

The Post Office makes two charges. The first is the cost of a local telephone call (which goes to Post Office Telecommunications). The second is either a 3 pence a minute

(peak) or 1 pence a minute (off-peak) Prestel usage charge with a 3 pence minimum (which goes to the Post Office Prestel department).

In addition, the user has to pay to the Information Provider between 0 pence and 50 pence per page accessed, according to the prices set by the IP. The pricing pattern emerging amongst IPs is for advertisement and routeing pages to be free; for residential/consumer information to be priced at either tenths of a penny or, at most, one or two pence; and for business information to be priced at 5, 10 or 15 pence.

In our experience it takes 15 seconds for a Prestel page to be displayed and read. Typically a user will look at four routeing pages before reaching an information page. The average cost for a user for each page of useful information is therefore about 3 pence at off-peak rates and about 12 pence at peak rates, in the business database.

The Information Provider incurs a variety of costs for the privilege of using Prestel. The Post Office charges an annual subscription of £4,000 and a fee of £4 per page per annum for each Prestel page booked. This means that any IP with a significant database — at least 1,000 pages — will have to spend £8,000 to join the Prestel club.

On top of these fees is the cost of inputting and maintaining the IP's database. This variable but high cost includes the cost of the terminal, the use of the telephone network (most updating and inputting is currently done online) as well as the labour costs which vary widely depending upon the size of the database, the frequency of updating, editorial standards, etc. The consensus amongst large IPs is that the overall cost of inputting and maintaining a single frame on Prestel, including overheads but not the Post Office charges, is between £20 and £30 per annum.

Editorial and Advertising Standards

Given that Prestel has no central editor or publisher, and no board of governors or director-general, by what mechanism are editorial standards to be maintained? How is advertising to be controlled? Indeed, what are the standards that apply to this new medium? We will look first at the issues of editorial standards, then at advertising.

The last 12 months have been an intensive learning period for Information Providers in establishing the ground-rules for the editing and presentation of material on Prestel. After some disastrous false starts, in which the facility to use seven colours, flashing characters and huge capital letters (so-called graphic characters) was fearfully abused to produce some garish and illegible pages, Prestel is settling down to a family of styles that recognise both the need for visual restraint if users are to look at more than one page at a time without going blind, and the need for tightly edited text and tables that conform to the severe space constraints.

Natural competition and emulation has served to show up and correct those IPs whose editorial presentation was poor. Conversely a number of IPs have emerged with quite distinctive 'house styles'. For example, one can readily distinguish a Fintel page from a Mills and Allen page.

However, this relative success does not answer the question of the reliability of the data itself as opposed to its presentation. To some extent, the reliability that an IP has established in other spheres is itself a guarantee of the reliability of its data on Prestel. The London Stock Exchange, for example, could hardly be bettered as a source of London stock market prices; or British Rail as a source of railway timetables; or (we would hope) the 'Financial Times' as a source of business information. But, as already mentioned, the UK Post Office has adopted a deliberate policy, through its pricing and booking arrangements, of encouraging small IPs who may be new to Prestel, and without an established reputation, to come in under the wing of the bigger, established IPs.

These big 'umbrella' IPs (one may instance Baric and Link House) not only advise on how to present material and then design and key in the pages for the small IP. They also act in a negative sense. They screen out bad material and bad design, since their own reputation quicky (and all too visibly) suffers if poor material is seen to go out under their 'umbrella'. (It should be stresssed that the name of the main 'umbrella' IP appears in the top left hand corner of the page, as well as the name of the small IP, unless the small IP has gone to the expense of purchasing his own three digit master page number). These 'umbrella' IPs are legally responsible to the Post Office for the content of the smaller IP's pages (for libel, obscenity, etc). Apart from this minimal constraint, however, the situation of the smaller IPs is rather obscure; both from the IPs' point of view, and from the users'.

Advertising on Prestel has its own range of problems of identity and content. The Post Office, true to its role as a common carrier, has not laid down any regulations about advertising; content is not its concern. The result is that conventions and formats have had to be rapidly developed by the IPs themselves.

It is easy enough to identify an advertisement when it appears on the bottom few lines of the page. But most Prestel advertising is not so obvious, so familiar. Most advertisements are complete pages of information — sometimes labelled advertisement, sometimes not — interspersed between and with no visual differentiation from a non-advertisement.

Organisations which in traditional publishing or broadcasting are clearly presented as advertisers can become Prestel IPs and present themselves as non-advertisers, as editorial. Typically, a retail group like Comet or an insurance company like Britannia can sub-contract pages from an 'umbrella' IP (in their cases, Baric, and Mills and Allen, respectively) and place information on the system. Neither the design nor any title or wording indicates that their information is advertising. The traditional distinction between editorial and advertising disappears.

At Fintel, there is a distinction, but it is not the traditional one. Each company that is covered in the Fintel business information service can buy a block of 100 Fintel pages within which to speak for itself, under the label 'advertisement'.

The choice to do so epitomises the central dilemma. The user of Prestel has to choose to look at these pages. They are not automatically thrust at him as an advertisement

might be when he is browsing through a magazine. Therefore the 'advertisement' has to have a high enough information content to attract the user. The company could indeed put that same information on to Prestel direct, on its own pages, and not carry the word 'advertisement'. It would cost more and (Fintel would argue) generate less user attention than if part of a much bigger database. But the choice illustrates the extreme fluidity of the very notion of advertising on Prestel.

All parties to Prestel are anxious to avoid having formal regulations imposed by some quasi-governmental organisation (such as the Independent Broadcasting Authority, which regulates commercial broadcasting). On the other hand, they recognise that there is and will be intense pressure to keep advertising on Prestel clean, honest and truthful. So a working part of IPs has been drawing up a Prestel code of conduct. The code covers editorial matters (for example, never leave the consumer in doubt about the price he is paying for information), but it is mainly concerned with advertising.

It is not yet completed. Should Prestel's advertising code be like the IBA's code? Or should it reflect the far less formal and restrictive code that governs UK newspaper advertising? Should Prestel develop its own code, without preconceptions? It faces some very new problems. The protection of children, and the prohibition of quack medicines, may be easy enough. But there is a clear and fundamental difference in the forms of financial advertising that are allowable on the press, on TV, and on Prestel. For example, company profit figures are routine in press advertisements; are held to be unacceptably emotive in the context of a TV commercial break aimed at the general public; yet are pure information when carried inside a Prestel business information service which is aimed at businessmen.

If an organisation breaks the code of conduct, what should be the sanction? Breaking the law, of course, is a matter for the courts. But breaking the code? Should the offender be thrown off the system? The Post Office, which has the technical power to do that, is a common carrier and anxious not to be a censor. So who is to make the judgement? It is hard to see a group of fellow IPs being allowed to hold 'kangaroo courts' or to try offending parties. Yet sanctions, presumably, there must be.

Codes of conduct and sanctions rely on records being kept of the offending material. How should this difficult, immense task, be carried out? Should IPs, or the Post Office itself, on behalf of everyone, keep a record of the material on the database? Should a complete archival magnetic tape be run off every week? Every day? Every time the data changes (surely a physical impossibility, with 200,000 pages)? And how long should records be kept?

The Market in Conflict

The ideas and requirements of the three groups of participants in Prestel — the Post Office, the TV manufacturers, and the Information Providers — are sometimes in conflict when it comes to the size and nature of the market that Prestel will reach. Will it be a mass/residential market or a specialist/business market? Will the market make Prestel viable in 1 year, 5 years, 10 years, ever? Will Prestel users access the data bases once-an-hour, once-a-day, once-a-year?

For the Post Office, the penetration of the mass/residential market is seen to be absolutely essential if Prestel is to generate the sort of revenue that will make it a profitable part of Post Office Telecommunications. One of the principal attractions of the whole Prestel concept to the Post Office is the fact that it should mean that the residential telephone network — a large, under-utilised asset — is more fully exploited. The Post Office does not care whether users access the network and the Prestel computer by means of a new TV set or an adaptor.

Sets are Expensive

For the manufacturers, the mass/residential market is also the only one that makes economic sense. The British TV manufacturers see Prestel TVs as the possible answer to the flattening-out of colour TV sales now that the colour market is nearly saturated. The economics of mass production, however, dictate that sets must be sold in hundreds of thousands before the cost of a new production line and retooling (perhaps about £15 million) can be recouped.

At the moment, Prestel sets cost £1,500 and it is doubtful whether even at this price, which is more than double the price of the equivalent non-Prestel set, the manufacturers are making much profit. To get the price down to the range of a normal-set-plus-15% will require a market of considerable size.

It is argued by the Post Office and the Information Providers that, in order to reach a mass market, the price of sets must be lower. In other words that the manufacturers must start selling their sets now at price levels tied to mass production. The manufacturers, understandably enough, want to see a lot more evidence that the mass market exists before taking such a step.

The other option is to produce add-on adaptors at around £100 each. While not so attractive to the UK manufacturers, it might well be a most rewarding business for some US manufacturers.

For the Information Provider, the choice of what market to aim for is not so clear-cut. An IP needs an income of between £25 and £35 per frame to make participation in Prestel worthwhile. This income can be generated by a lot of users accessing the IP's pages with a low price per page or a small number of users paying a high price per page. It can be generated by a lot of users looking at a few pages frequently, or at a lot of pages occasionally. Unlike the manufacturers, but like the Post Office, the IP is not particularly concerned whether the user has a new TV, an adaptor with an old TV, or even an adapted Visual Display Unit (VDU); or whether the user calls Prestel on a congested business line or an underused residential telephone line. It does not matter — just as long as he calls.

What of the users, the buyers? The two kinds of user, the business and residential, have rather different characteristics. For the residential user, the nature of the Prestel system — paying both for information page-by-page and for connect time — will be novel and not particularly welcome. People currently buy their information sources

— books, newspapers, televisions, etc — on a one-off, fixed, basis. Once purchased, each source can be used and re-used without incurring any perceived extra costs.

Television is notoriously non-transactional, to the extent that many people believe it to be free or to cost only the price of the licence fee. We believe that Prestel's pay-as-you use system will considerably inhibit the residential user because of the psychological effect of having an open-ended, hard-to-control expense (especially with the option of Ceefax and Oracle). The user will be reluctant to browse through the database because he will be too conscious of the meter ticking up the pence as he goes from page to page.

As mentioned earlier, the cost to the residential user for each access to an item of information will be about 3 pence. It seems reasonable to assume that an average Prestel session will involve accessing two or three items of information. The average residential user will be paying about 10 pence a time, a price we consider too high to allow Prestel to become a regularly-used source of information in the home. After all, a local newspaper, which contains a lot more information that is immediately useful, costs only 10 pence, and even at that level there is considerable evidence of sales being sensitive to price rises.

The fact of the matter is that the consumer is not really used to the idea of paying directly, per item, for information. Prestel's prices, as they currently stand, are not going to encourage him to change his habits.

More Popular with Businesses

An even greater stumbling block for Prestel's attempt to break into the residential market is the price of a Prestel TV set. The user sees the other side of the coin from the manufacturer. Sets are going to be expensive for quite a long time. To persuade a potential user that Prestel — intrinsically expensive — is worth a 50-75% premium on top of the normal price of a new set is going to require some ingenious marketing.

In the business sector the picture is much more encouraging. First, a Prestel set is quite cheap in terms of the price of existing VDUs and in terms of most companies' capital budgets. Second, companies are amenable to paying for business information whether it be for credit ratings, desk or market research, or a subscription to a news service. The market for business information is not particularly price sensitive as long as the information is of good quality; and, in terms of prices for business information, Prestel is very competitive.

The difficulty in marketing Prestel in the business sector is one of designing a database of sufficient breadth and depth to attract large numbers of users. There is also a considerable debate as to whether individual IPs must take on the burden of recruiting users on the strength of the IP's own database, or whether there should be some sort of collective effort for business marketing; a selling of Prestel business information as a whole, as a package.

The whole question of cooperation in marketing is fraught with problems. In theory it might seem sensible to set up a Joint Prestel Marketing Board and concentrate the energy and resources of the triumvirate — the Post Office, IPs and manufacturers — in one coordinated marketing effort. But the realities of commercial life make it hard for the participants to subordinate their own local interests to the interests of Prestel as a whole.

What is emerging at the moment is a marketing approach in which the Post Office does the corporate advertising for Prestel, establishing the name and the concept in the public eye, while manufacturers and IPs do their own separate marketing of particular sets and databases to whatever audience is felt to be appropriate. Cooperation will be on an ad-hoc, informal basis. We do not know whether this approach will work soon enough for Prestel to fulfill its undoubted potential. But the events of this year will allow us, for the first time, to see Prestel in public operation, and to judge the likelihood of success with some accuracy. ■

The Authors
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An IP's View: Six Propositions

by Richard Hooper, Mills & Allen Communications

PRESTEL IS NOT at all a vertically integrated organisation. It involves three independent (though very interdependent) components — the production of information, a system for the storage and distribution of information, and the manufacture and supply of Prestel television receivers. The UK Post Office directly controls only one component — the storage and distribution system, which has been given the trademark Prestel. In the USA, in contrast, some of the corporations interested in developing videotex have all three components integrated within their families of subsidiary companies. Elsewhere, the scenario is different again.

In this paper I want to concentrate on the production of information for Prestel, on the role of the Information Providers (IPs). The experience of my own company in Prestel will serve as a basis for a general examination of the IP's role.

Motivation and Money

The decision by IPs to get involved with the test service of Prestel was almost wholly intuitive ("a leap in the dark", in the words of one large organisation). The decision has on occasion been rationalised with rather thin market research. To be a little cynical, it was not a very difficult decision because the Post Office made it very cheap to join the club for the test service; although its charges, of course, are only one cost among many. The test service charge was £1 to lease a page space (75-100 words; 22 lines of 40 characters, in computing terms), for a year, with a minimum lease of 100 pages; and £250 to be a registered IP for a year with a three digit entry number. The minimum total was only £350.

The tariff structure to IPs for the public service, published by the Post Office at the end of 1978, takes the basic rates up sixteen times — to £4 per page per year, plus £4,000 annual registration charge for one three digit entry number. Not surprisingly, the decision to *stay* in Prestel is much more difficult, and some of the smaller Information Providers are already dropping out.

The cheapness of the test service rates had the disadvantage of encouraging IPs to think that Prestel would be a very cheap publishing medium. The resources required to mount a reasonable operation were underestimated. Irrespective of technologies, the publishing function is and looks like remaining labour-intensive and therefore expensive.

The motivation to enter Prestel, for some IPs, particularly the newspaper groups, might best be described as defensive. If Prestel were to develop as a medium for classified ads, for example, then newspapers who depend upon classified ads for survival need to be in a position to exploit it. A lot of the IPs already in the publishing business (books, magazines, newspapers, guides and directories) have reduced their financial risk by seeing Prestel as a purely marginal cost operation; at least, in the early years that will produce only low income. That is to say, they use the slack in their existing manpower to re-format information already paid for in terms of another medium and then store and distribute it on Prestel pages. It is quickly becoming clear that this marginal cost strategy, whilst commercially understandable, is not particularly good for Prestel's own development.

A smaller number of IPs, including my own company and, for example, Vernon's Sportsdata, has invested in Prestel from no existing information or data base. They see it is a new commercial opportunity and are developing information especially for it. For them, there are few marginal costs to play with.

Finally, on this topic of motivation, it needs to be underlined that Prestel is developing from a strongly commercial starting-point. The Post Office does not as a matter of principle discriminate between public service and profit-making IPs. In the historical British context, Prestel is much closer to printing and publishing than to radio and television. It is being run by the Post Office as a profit centre with no cross-subsidisation from other telecommunications activities. All IPs, from the public or private sector, have to make up their own minds regarding their aims for this new medium, and how those aims are to be financed.

Strategies for a New Medium

Having decided to make an initial investment in Prestel, the IP next has to formulate a strategy for the medium. In the private sector, it will presumably make a strategy for future profit; in the public sector a strategy for need in terms of audiences and types of information. But these strategic considerations rest on answers (there are more than one, and no obvious agreement yet) to the question — what kind of a medium is it? Any answers at the moment are subjective and anecdotal. As market research data starts to come in from the test service users (interviews, analysis of calls to the database, etc), so the answers can be made more precise. I believe that we will be surprised — both happily and unhappily.

Prestel as a medium — in its current implementation on the test service computer — can best be understood by means of six propositions. Prestel is

- a mass medium.
- an unsophisticated information retrieval system.
- an update medium.
- a not very interactive medium.

– a promotional medium.
– not like printed-on-paper text media.

The comments that follow are based on my experience with Prestel and on my analyses of the UK Post Office's marketing of Prestel as a generic system. They do not necessarily refer to all telephone-based videotex systems (that is, systems of information retrieval using computers, ordinary telephone lines and modified TV receivers). Other videotex systems are likely to have different pricing systems, different graphics and page capabilities, different computing arrangements. All of these change the nature of the medium. For example a videotex system which charged the user only for the telephone call (which is the Post Office's policy for its extensive recorded sound services of weather, traffic, cricket, the speaking clock, etc) would be much more of a browsing medium than Prestel where the user is paying both call charges, to be connected to the computer, and page charges.

A Mass Medium

The first, keystone, proposition is simple: Prestel can only be comprehended as a mass medium. By a mass medium, one means that significant numbers of people will access a small number of pages frequently, as distinct from small numbers of people accessing large numbers of pages infrequently. From the very beginning, in the early 1970s, within the Post Office's research department, Prestel (or Viewdata as it was then called) was developed as a mass medium for the residential and business market. It was seen as a Gutenberg-type invention in relation to the emerging technology of electronic publishing. The economics of Prestel (by far the cheapest computer-based information system ever developed), its easy-to-use design, and its combination of existing mass technologies (computers, TV and telephones), all converge towards this point of view.

The costs to the user, particularly in the residential market, have turned out, perhaps not surprisingly, to be higher than the ardent prophets had claimed. Most IPs

believe that this one factor – the costs to the user both for the modified TV set and for using Prestel on a day-to-day basis – still threatens to stop the emergence of a truly mass medium. If the concept of a mass medium is lost, and Prestel became just another specialist business information system, a large numbre of IPs would retire.

Individually Tailored

But Prestel, even so, is a mass medium with many differences. It has the potential of being the first mass medium to be *individually tailored*. The viewer calls up the pages he or she wants to see when he or she wants to see them. There is no tyranny of peak hour transmission times here. The viewer of Prestel right now has over 150,000 individual pages to choose from – simultaneously. Unlike mass print publication, the Prestel viewer does not have to buy the whole package (book, magazine, newspaper) in order to get the single piece of information being sought (cinema times). Prestel is also individualised in a psychological sense. When the viewer calls up Prestel by using the button on the keypad, the computer greets him or her by name.

Prestel is unlike any other mass media – particularly broadcasting – in requiring the viewer to be *active*. Unless the viewer makes a decision and presses a further button, the same page will sit on the TV set for ever. Prestel, unlike television, does not flow past the eyeballs once switched on. As a result Prestel is absolutely not a medium for inertia-selling. Those people who feel that the consumer of Prestel will be bombarded by commercial messages tend to forget this simple fact. On Prestel you have actually got to choose to be bombarded. From the point of view of the IP, each page has to be designed in such a way as to encourage the viewer to want to move on and see further pages.

Prestel is not (in the foreseeable future) a mass medium in the sense of mass storage. The capacity of the system at the moment is 250,000 pages. David Gordon, Viewdata editorial director at 'The Economist', has pointed out that one weekly issue of 'The Economist' would alone require 1,000 Prestel pages. It is therefore a mistake to think that Prestel could be truly encyclopaedic. Print-on-paper shows no signs yet of losing its historic role in storing encyclopaedic information. Even today's 400 on-line specialist computer databases (chemistry, patents etc), tend not to store information, but information about information in the form of bibliographic citations.

Prestel is best suited to abstracted, boiled-down, information. Given our current problems with information and paper overloading, Prestel may prove a blessing in disguise in its requirement for compact communication. People will use it for key ideas, not universal knowledge. The inventor of the system, Sam Fedida, has called Prestel "the first port of call for anything you want to know". There is no evidence of anyone putting on Prestel all current film and theatre activities in London (which would be the encyclopaedic approach); but there are lots of IPs including 'Time Out' magazine putting up selections and best buys. Attempts to put up a real encyclopaedia on Prestel by two IPs have met with little success to date. With the higher

storage tariffs of the public service, such profligate uses of page space will be driven out of business.

To survive as a mass medium, Prestel's costs have got to be kept low to the user. But equally important, the pages on Prestel have got to hold a breadth of information, education and entertainment (notice the three functions of the BBC charter being identified within the Prestel community). Prestel must carry both hard and soft data.

Hard data alone (train times, weather, the latest news, cinema listings) will never be sufficient to generate mass residential audiences. Indeed, one can argue that Ceefax and Oracle, the broadcasters' teletext systems which are available on most Prestel TV receivers, will cream off the mass market's more obvious needs for hard data like news and weather conditions. Teletext pages are free to look at, Prestel pages are not. In Prestel, soft data (games, horoscopes, the unexpected, educational uses for home-based learning) will play a central role.

Not a Sophisticated Retrieval System

By comparison with the big, worldwide on-line retrieval systems, such as Lockheed's Dialog, SDC's Orbit, the New York Times Information Bank and Reuters' Monitor, Prestel is a very unsophisticated form of information retrieval. Lockheed's Dialog and the rest offer complex and complicated retrieval possibilities (key word searching, etc) which tend to be used only by information specialists and librarians. Prestel is simple and easy to use by non-specialists. The trade-off is that its indexing/retrieval methods are crude. Prestel is ill-suited for information that is scattered on large numbers of different pages, and for information that has to be searched by more than two or three different routes at the most. In other words, Prestel is ill-suited for those types of information where the requests for the information cannot be formulated in one of a very few standard ways to meet the majority of users' needs.

Most on-line information retrieval systems expect to be used by someone who knows what he is looking for in a very precise sense. Because Prestel is not encyclopaedic, and because it is not a sophisticated retrieval system, it may have difficulty satisfying this sort of rational and precise information-seeker. The information being sought (the time of a train this Saturday from Plymouth to Bristol) is either not there at all, or not findable.

Prestel must be designed to cater mostly for the viewer whose information requirements are less focussed, whilst not giving up the attempt to satisfy some of the requirement for carefully selected hard data. The two types of viewer, and the problems of customer satisfaction that face Prestel, can be understood by using the analogy of tank gunnery. A tank has two main types of ammunition — armour-piercing shells and high explosive. Armour-piercing shells must hit the target to succeed (a miss by an inch being a miss by a mile). High explosive shells can hit within a reasonable radius of the target and still be effective.

It may be fruitful to look at Prestel not as an information retrieval system at all, but as a publishing/communications device. After all, most print-on-paper media such as books and newspapers are seldom described as information retrieval systems. Perhaps Prestel can best be comprehended as a page look-up system, an electronic noticeboard, an electronic newsletter. Instead of people using it exclusively to find out something they want to know, they may in fact use it on a regular basis to find out what they ought to know — a very different matter indeed.

An Update Medium

The Prestel computer is open around 23 hours a day. The information on its pages can be updated rapidly by IPs working on-line. Every minute on Prestel is a deadline. Each viewer will expect each page to be kept up to date. If he calls up a page at 12.10 pm he will feel that, somehow, the page should have been checked for topicality the moment before. The publisher cannot hide behind the familiar tradition of a range of editions and issues, forced on him by technical constraints, which protect the seeming topicality of books, newspapers and magazines. The television news programme is fixed in a particular time slot, but news vendors on Prestel have got to move towards the model of the 'all-day newspaper'. Not news on the hour every hour, but news on the minute every minute.

In practice, given the size of the market, Prestel will not be able to meet such demands for updating. Until there are easier methods of computer-to-computer communication, updating will remain labour-intensive and expensive. And there is another reason why it is a mistake to overstate Prestel's ability to be up to the minute. Prestel is not in a technical sense a real-time system (in the sense that an airline booking system is real-time). Each page, once called from the central Prestel computer, resides in the store in the local Prestel receiver. Any updating to that particular page whilst it is being viewed by the user goes on out of sight. By contrast, a teletext page is automatically refreshed/updated on each cycle.

Not Very Interactive

It is similarly easy to believe that Prestel is more interactive than in reality it is. Some of the main interactive features (computer processing and message facilities) which were on the pilot trial computer are no longer available, because of cost and load factors.

Prestel is interactive, by comparison to broadcast teletext, only in the sense that the viewer can be moved from the current page to as many as 11 other pages by pressing a single key, which represents a command to the computer. When an IP builds a page (A) on Prestel it has to state to which other pages (B, C ...) the page (A) should be connected. The sum of connections is the all-important routeing structure.

Prestel is also interactive in terms of its response page. This facility allows the viewer to send certain types of information — typically, his name and address, credit card number, answers to multiple choice and true/false questions — back to the Prestel computer, which sends it to the Information Provider who owns that response page.

A Promotional Medium

For reasons that are not altogether clear, Prestel pages seem to have strongly promotional air about them. This undeniable fact is rather paradoxical given the other point,

which is also generally agreed, about Prestel not being a medium of inertia-selling. But it does seem to be true.

Prestel pages promote in two rather different ways. First of all, they promote the name of the information provider which has to be displayed, like a headline, in the top left hand corner of the screen on the same line as the page number and the page price (eg, Mills & Allen 480a 0.5p). It seems peculiarly difficult on Prestel to differentiate advertising from information. The new medium does not encourage such a traditional demarcation.

Secondly, each Prestel page is required by the routeing structure to promote subsequent pages. Each page is an integral part of a whole network of routeing and information pages. The instructions are continual — press such and such a page for more.

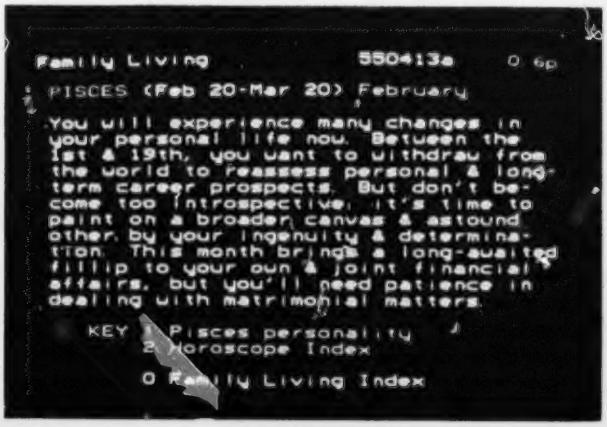
It should be clear by now that Prestel is very different from print-on-paper media. Prestel is not at the moment portable nor (yet) recordable on hard-copy. It is a storage medium that allows pages to appear in a sense from nowhere and then disappear without trace. Prestel has some of the ephemeral qualities of live broadcasting whilst at the same time being readily accessible. The information structure of Prestel is largely invisible to the viewer (except for those prompts or routeing instructions selected to appear on the page currently being viewed), whereas the structure of a book or newspaper is very visible.

The location of the viewer in a sequence of pages is a very difficult editorial problem. Unlike the book, Prestel is a non-linear and non-serial medium, causing particular difficulties for writers. Whilst there can be a general first page or a top page, there can be no single last page. Different readers will pass through different tracks and exit at different points. Finally, by comparison with print-on-paper, the range of typographical and graphical possibilities is very limited indeed. As a result there will be an increasing tendency for Prestel pages to look alike.

IP strategies for Prestel

The Prestel Information Providers have formulated various strategies for using their pages. Given the decision by the Post Office to operate Prestel as a common carrier, with no exclusive arrangements being made with chosen IPs to produce particular types of information, the medium is developing in a highly competitive climate. In general, IPs seeking a return on their investment in Prestel will get it in one, two or three possible ways.

First of all, each page on Prestel has its own individual price — which can be set from 0 pence to 50 pence. Each time that page is accessed, the viewer's account is debited with the page price and the IP's account is credited. The Post Office earns its Prestel income by charging the equivalent of a local telephone call for as long as the viewer is occupying a computer port. In addition, they take off 5% from the monies they send to IPs to cover bad debts and administration. At the moment, most IPs are making assumptions that the average Prestel viewer will spend about £50 a year exclusive of phone charges. Thus with three million sets in 1983, the Prestel income could be £150 millions a year, of which about half would accrue to the IPs and half to the Post Office.


Family Living 550413a 0 6p
PISCES (Feb 20-Mar 20) February
You will experience many changes in your personal life now. Between the 1st & 19th, you want to withdraw from the world to reassess personal & long-term career prospects. But don't become too introspective, it's time to paint on a broader canvas & astound other by your ingenuity & determination. This month brings a long-awaited fillip to your own & joint financial affairs, but you'll need patience in dealing with matrimonial matters.
KEY 1 Pisces personality
2 Horoscope Index
0 Family Living Index

The second way of generating revenue is to sell advertising space, either on whole or on part pages. Since the Prestel computer registers each access to each page, it is possible to know how many accesses have been made to a page containing an advertisement. This data will concentrate the minds of advertising agencies and Information Providers (the media owners, in Prestel terms) wonderfully.

Thirdly, there is a growing business for a small group of IPs, including my own company, in providing a bureau or publishing service to other organisations that wish to appear on Prestel. This publishing service involves the subleasing of page space, consultancy about optimal types of information, the creation of pages and the design of routeing structures, keeping pages up to date, and making sure that the indexes on screen and in the various directories contain the necessary cross-references.

Filling the Pages

In order to fill Prestel pages, the Information Provider needs one or more editing terminals, telephone lines, and some staff. The editing terminal, hired from the Post Office, is a Prestel TV set with a full keyboard and special keys for the seven Prestel colours and simple graphics. The IP can use a special editing number to create or modify his page on-line. New editing terminals coming on the market are in effect little computers, allowing the pages to be developed and maintained off-line.

In the early days, most IPs had one staff member doing the editing by him or herself, often part-time. But the increase in the number of pages to be looked after has led to the creation of a number of different jobs. A fairly common pattern of working is to split the work into an editorial/writing function and a database management function (assigning page numbers, checking on routeing structures etc). Some IPs have made limited use of professional graphic designers.

A few IPs have made the actual keyboarding of Prestel pages in to a separate function. Others feel that everyone in a Prestel team should keyboard, if only because this gives the staff a physical understanding of the medium. Also, there is a physical limit to any one person's keyboarding in a working day.

The key editorial difficulty experienced by most IPs is the routeing structure. The editor has to best-guess the average viewer as to where he or she would want to move next. Even small numbers of pages can present complex routeing problems if there is more than one way into the information pages. For example, a sequence of pages produced by Mills & Allen for the Tramway Museum Society has 40 routeing pages to 70 information pages. The subject is UK historical museums. Users can approach via the type of museum, the geographical area or the alphabetical listing.

An IP database with thousands of pages can produce extreme complexity of routeing. Mistakes are both difficult to discover and time-consuming to rectify. The key problem of database management is keeping track of the pages. IPs can easily 'lose' pages if they are not properly documented.

It is the general experience of most IPs that filling pages is much more time-consuming than was ever predicted. All kinds of things — noise on the telephone line, computer ports being engaged, the need for documentation, the need for careful proof-reading — combine to slow down productivity.

Surrounding the activity of page-filling, there are a whole range of other matters to be attended to. Decisions about page-pricing are an integral part of an IP's publishing activity, for example. Then there are contractual concerns to sort out — contracts with the Post Office, new forms of contract with writers and other organisations (sub-Information Providers) which take page space for which the main IP is legally liable. Prestel is a public medium, so that much care has to be taken about copyright, defamation and liability for inaccurate information — all within a medium whose edges have not yet been defined by law.

Then there are politics and promotion to attend to. As for politics, the major Prestel IPs have formed a trade association in order to have a strong and united voice both with the Post Office and the TV set suppliers. Committees and sub-committees make their usual claims on precious time.

The problem of promotion is simply stated. How does the viewer find your page amongst 200,000 others? There is a lot of very detailed work ensuring the pages are indexed by the Post Office, who own and operate all the main index pages on Prestel. It also involves expenditure on advertisements in the directories that are currently being published quarterly. Already IPs have begun to promote their three digit entry numbers in the manner of commercial radio — Capital Radio 194, Consumers Association on 333, IPC on 456.

A State of Uncertainty

There is a danger that the experience of being an Information Provider on Prestel might appear to be too calm, cool and collected. These early pioneering years on Prestel are remote, utterly remote, from any such serenity. We have all experienced and continue to experience bewildering and sudden changes in ground rules. We have all experienced delays with getting equipment. Timescales and forecasts remain uncertain. The day when significant revenue can be expected recedes slowly. The medium can be infuriating to work with, and then very exciting. Investment decisions have to be made in the wrong order — in other words, before the evidence from the market place has been assembled.

The uncertainties surrounding the birth of Prestel are heightened by the commercial motives of most IPs. As one of the first writers in Prestel, Mike Bygrave, has commented: "one of the fascinating things about the birth of Viewdata as opposed to the early days of radio or TV is how few 'producers' or 'directors' or 'creative people' are involved. Everyone's a *businessman*."

The overwhelming uncertainty is indeed a creative one — what sort of a medium are we dealing with? Can it genuinely inform, educate and entertain? If so, how? The one thing that all Prestel IPs learn very quickly is to be flexible. What we are doing today is almost certainly going to be wrong. The computer, silently counting page accesses from unnamed viewers to numbered electronic pages 23 hours a day seven days a week, will shortly be telling us. ■

The Author
Richard Hooper is Managing Director of Mills & Allen Communications Ltd, London, which is a major Information Provider to Prestel.

Flying Fast but Safe

by Alex Reid, Prestel

THE UK POST OFFICE is aiming, in Prestel, to bring computer-based information services to the mass market. If we are to succeed, we must build a service that is simple, cheap, open, and global in scope.

For simplicity, we stick to a 12 button control pad, like a pocket calculator or a push-button telephone. We use simple search procedures, and we communicate to the user in simple English. No training of any kind is needed to operate Prestel. For economy, we use the technology of the home television set, and we design the computer system to handle many customers simultaneously. To make the system open, we will rent storage space in Prestel to any organisation or individual, and we leave to the information provider full editorial control over the information he provides.

We also make the service open to competition in all its elements: competition in the provision of information, competition in the provision of Prestel TV sets, and competition with ourselves, in that other organisations may establish competing viewdata services. To achieve global scope, we are working for common international standards, and are selling our viewdata technology overseas.

If we succeed, we think the Prestel service can bring benefits to its users, its information providers, the Post Office, and the British economy as a whole.

But success will not come easily. One can glibly imagine a fine day, ten years hence, when there are millions of Prestel customers, and millions of pages in the Prestel data base. It is not so easy to see how one gets to that point. For why should anybody buy a Prestel set in the early years, when their costs are relatively high, and the amount of information in Prestel is relatively low? Why should the TV set manufacturers gear up for mass production until there is a mass market? Why should information providers go to the expense and effort of building attractive data bases until there are many customers? And why should the Post Office build an immense computer system, costing tens of millions of pounds, without any certainty that it will be used?

Why indeed? But if we all wait until somebody else has done the hard work, we could wait for ever. We have to devise a business strategy which will cut through these vicious circles. That strategy has to take account of some peculiar features of the Prestel venture, namely:

Economies of scale. There are large economies of scale in several areas of the project. These economies are a strength in the long term: a problem in the short term. There are enormous economies of scale in the production of the micro-electronics needed for the special Prestel TV sets. There are extreme economies of scale for the information provider; his costs of gathering and entering the information are fixed, irrespective of the size of the system and the number of users connected to it, but his revenues are more or less proportional to the number of users. There are also some economies of scale in the computer system; a larger system can spread the central overheads of research and development, and of management; and a larger data base can justify cheaper methods of data storage.

Variety of skills and inputs needed. Just as the broadcasting industry needs a great variety of skills, from writers and actors to managers, engineers, and manufacturers, so too does Prestel. We need journalists, editors, designers, librarians and information scientists, psychologists, computer scientists, analysts and programmers, electrical engineers, managers, marketers, planners, accountants, sales and operating staff. We also need the skills to design and manufacture the Prestel computers and the Prestel TV sets. In addition to human skills, we need large inputs of capital and plant.

Limited stamina of participants. To bring together these skills and inputs, we must band together many organisations in common commercial purpose. And we must recognise that these organisations have limited stamina. They cannot go on for years and years losing money as the system gradually grows to viable size.

Uncertainty. It is fun to be the first in the world, but it produces plenty of uncertainty. Will the customers take to Prestel? If so, what kind of customers? And what kind of information will they want to access? Is the data base big enough to be attractive? Is the terminal equipment right in price, design, and features? What priorities should we attach to new facilities, such as messages, calculations, enhanced graphics, hard copy?

The consideration of these factors — economies of scale, variety of inputs, limited stamina, and uncertainty — leads us to a business strategy of maximising speed and minimising risk. By maximising speed we aim to get early into the economies of scale, to attract the variety of inputs we need, and to reach economic viability before our collective stamina is exhausted. And the high uncertainty — made higher by the need to move fast — calls for strenuous efforts to identify and limit risk.

Maximising speed

Like an aircraft taking off on a runway of limited length, we must achieve flying speed before we run out of tarmac. We must, that is, achieve overall economic viability within the limit of the loss-making period that we and our partners are willing to accept. We have many levers we can pull to increase speed, and we are pulling them all.

They are:

Strong financial backing. We are lucky to have, in the Post Office telecommunications business, a parent that is profitable, and that is already investing at the rate of around £1,000 million per annum. It sees Prestel as a potentially important new service, and has both the will and the means to back it.

Harnessing commercial interests. By adopting the TV set as the display device, we harness the powerful commercial interests of the TV set manufacturing and distribution industry. This industry is looking for new products to continue the growth it has enjoyed through the advent of colour television. All the British TV set manufacturers (such as Thorn, Philips, Decca, Rediffusion, Rank, and ITT), and all the main retail and rental organisations (such as Granada, Radio Rentals, DER, Currys, Comet, and Visionhire) are now involved in Prestel. The main telecommunnications companies (GEC, STC, Pye TMC, Plessey) are making monochrome business Prestel sets.

More than 150 information providers have booked 185,000 pages in the system, and are queueing up for further pages as fast as we can supply them. Beyond this, Prestel has called forth a diverse service industry. Firms are offering consultancy, training, design, or input services; and three firms are publishing, as commercial ventures, printed directories for Prestel users. The combined energies of all these firms lends extra speed to the Prestel project.

Fostering competition. It may seem odd that the Post Office — a telecommunications monopoly — should wish to foster competition in Prestel. But we do. With the exception of the use of the telephone network (which is both a natural and a statutory monopoly) the activities involved in Prestel lend themselves to competition: competition in the provision of sets, the provision of information, and the provision of the service itself. By fostering that competition we encourage all and sundry to enter the Prestel industry; more important, we force those who are in early (including ourselves!) to move fast in order to stay ahead of future competitors.

Exporting Prestel technology. We have sold Prestel technology to the telecommunications administrations of West Germany, the Netherlands, and Hong Kong, and a viewdata service is to be established under licence from us in the USA by INSAC (a software export company formed by the UK government's National Enterprise Board). These export successes generate revenue which we can plough back into further research and development, to speed technical progress. Export successes also play an important confidence-building role within our own team, within our senior management, and among our partners.

The 'tidal wave' approach to marketing. We believe that Prestel can become, like the telephone, a universal means of communication, used by all manner of people in all manner of places for all manner of purposes. To boost its universal nature, we are keeping it cheap, simple and robust, and we are aiming for early national coverage. We hope in a couple of years to get the service within reach of a local call of more than half the telephones in the UK. To maximise the chances of rapid take-off in the market place, we will be adopting a 'tidal wave' approach to the marketing of Prestel, stressing its universal application in the home and office, in factories, schools, libraries, shops, government offices, and public places.

Open Policies

Simple and acceptable policies. Regulatory process can, for good or ill, impose great delays on the growth of a new communications medium. Examples are domestic satellites in the USA, and cable television in the UK. Viewdata is the subject of regulatory enquiry in several countries. To avoid these delays in the UK, it was necessary to seek simple and acceptable policies for Prestel. Our basic policies, which seem to have gained wide acceptance, are:

a. Any organisation or individual may become an Information Provider to Prestel.

b. Editorial control over content lies with the Information Provider, subject only to the requirements of the law.

c. The Information Provider decides the price at which his information is offered (within a range, at present, of 0 pence to 50 pence per page).

d. Any organisation may supply Prestel sets to customers, subject to safety and technical approval of each type.

e. Other organisations may compete with the Post Office in the offering of information retrieval services of the viewdata type.

A long term view of prices. The charges the Post Office makes for the use of Prestel are intended to enable Prestel to provide an adequate financial return in its own right, without subsidy to or from the Post Office telephone service. Within this policy, there is a choice between quick profit and long-term growth. Our pricing policy is designed to produce long-term growth, and is based on the expectation that we can build a large national service, whose overheads would be spread thinly over many users. To stimulate the price-sensitive residential market, and to encourage efficient use of the computer capacity, we are introducing a reduced usage charge during off-peak hours (initially 6pm to 8am, and all day Saturday and Sunday) of 3 pence for 3 minutes, as compared with the normal Prestel usage charge of 3 pence for 1 minute.

Vigorous and skilful publicity. It is our intention to publicise Prestel with all the energy, care, and flair that money can buy. Our house style, for literature, stationery, and pages on the screen, has been produced by Pentagram, one of the world's leading design consultancies. We have appointed an advertising agency (Boase Massimi Pollitt Univas) which has an outstanding creative reputation, and we envisage substantial press and television advertising campaigns. All this publicity will be amplified by the individual promotional activities of our partners in Prestel — comprising some 200 Information Providers, set makers, set retailers, and directory publishers.

Forcing the pace. Over and above the specific activities listed above, the Post Office is adopting a general policy of forcing the pace on the Prestel project.

Minimising Risk

The high uncertainty in Prestel — made higher by the need

to move fast — calls for strenuous efforts to identify and limit risk. Our efforts to limit risk include:

Maximising diversity. The Prestel project may seem chaotic — 160 Information Providers supplying thousands of different types of information, three different firms producing Prestel directories, dozens of Prestel set makers and retailers supplying big sets, small sets, colour sets, monochrome sets, coin-operated sets, and adaptors. Behind this apparent chaos lies a deliberate policy of risk minimisation through diversity. When Prestel embraces so many different activities, it is statistically improbable that all will fail.

Reduced prices for long-term Information Provider contracts. The information in the database is the life blood of the Prestel service. To encourage Information Providers to stick with us during the financially difficult early years (and to reduce the financial burden upon them) we are intending to offer sharply reduced page storage charges to any Information Provider willing to sign a 5 year contract. This offer has already met with an encouraging response.

System design for modular growth. Our system is based on a network of independent mini-computers, allowing a modular growth in response to demand. We therefore do not have to face the risk of predicting, now, the size to which the system should grow in ten years time; it can settle out at whatever size the market dictates.

Minimising purchasing lead times. The risk of over or under investment is directly related to the purchasing lead times for the various parts of the Prestel system — accommodation, telecommunications plant, computers and associated equipment. To minimise risk, we defer decisions on investment to the latest dates which the lead times allow, and in some cases commit to the purchase of long lead time components before committing to the purchase of the equipment in which they will be incorporated.

Security through distributed intelligence and storage. The use of a network of independent mini-computers provides good protection against the risk of irretrievable data loss (since identical data are held in each mini-computer) and against the risk of total system breakdown (since each computer can, if necessary, continue to function in isolation from the rest of the network).

Promotion of UK technical standards. Prestel is the first service of its kind in the world. One of the risks of being first in telecommunications is that incompatible technical standards may later be adopted internationally. The leading country may then find itself facing a choice between persevering with a peculiar standard (with all the manufacturing and inter-working difficulties that implies) and a costly, disruptive change of technology to the new international standard. To avoid this risk we are vigorously promoting the present British viewdata technical standards, which we feel to be well proven and highly satisfactory. Our aim is to ensure that international standards adopted for viewdata systems are at least reasonably compatible with Prestel. This kind of compatibility will, we believe, be of benefit not only to our UK Prestel customers, but also to the worldwide community of viewdata users.

Technical research and development. The Post Office's continuing research and development programme for Prestel (currently running at about £2 million per annum) is designed to protect the service against the risk of technological obsolescence. We aim, through research and development, to secure a steady reduction in the real cost of the service, and a steady increase in the range of facilities it offers. We are, for example, investigating special computer centres for the mass storage of data, message services of various kinds, intelligent Prestel terminals (capable of drawing portable applications software from the central Prestel system, to operate as off-line personal computers), and more advanced forms of graphic display.

Establishing and protecting a brand name. A risk of being first with a new product is that one may spend large sums creating the market, only to find oneself undercut by a competitor who, by entering the market later, avoids these heavy start-up costs. Patents are a classic way of protecting against this risk; since there is relatively little in viewdata that is patentable, this protection is not available to us. But there is another form of protection — the trade mark — to which we are giving careful attention.

Strongly Promoted

Whereas 'viewdata' is a generic, descriptive term for wired systems displaying text on television screens, which cannot be registered as a trade mark, 'Prestel' is our proprietary trade mark, which we shall strongly promote and protect.

Stimulating new creative skills. One of the risks in Prestel is that customers may not find the service sufficiently attractive to justify its cost. The attractiveness of the service will depend not only on the factual content of the information on Prestel, but also on the creativity and imagination with which it is presented on the screen. This includes editorial treatment and graphic design; it also includes the way in which the pages are identified and linked by indexes and cross-references.

To speed the acquisition of these creative skills, we have placed an Editorial Development Contract with Mills and Allen Communications Ltd (a Prestel Information Provider). Under this contract, Mills and Allen have commissioned authors and designers to experiment with new and imaginative ways of presenting information on Prestel. Related consultancy contracts, in the field of indexing and graphic design, have been placed with Loughborough University, the Association of Special Libraries and Information Bureaux, and the Royal College of Art.

Intensive market research. The Post Office has committed £3 million to a Prestel Test Service, designed to elicit market research information from more than 1000 specially recruited residential and business customers. Among the test service users there is a statistically valid sample drawn at random from a list of households with colour TV and telephone, and from a list of all business telephone subscribers. Through the co-operation of the TV set manufacturing industry, test service recruits have been offered Prestel sets at rental charges corresponding to those likely to be achievable in two to three years time. The take-up of such sets, which has been encouraging, therefore gives us

a guide to the potential demand for the service as it grows.

The test service users are being interviewed before and after receiving the service. The computerised nature of Prestel gives us a remarkable opportunity to gather other rich and accurate data on the way the system is used. Given appropriate privacy safeguards, we can measure the amount and type of use of Prestel made by each type of household and business; we can measure the number of times each page in Prestel is looked at; and we can measure the efficiency of our electronic indexes that lead the user to the page he is seeking.

Risk analysis. To quantify the magnitude of the risks, and the effects of interactions between them, we have constructed a computer-based financial model of the Prestel service. Ranges of assumptions, with assigned probabilities, are fed into the model for more than 30 key variables (such as the cost of various elements, the rate of growth, patterns of usage). The model then produces hundreds of simulations of future financial performance over a 15 year period, indicating the spread of outcomes and their relative likelihood.

Multiple sources of commercial financial backing. Although nationalised, the Post Office is a commercial organisation, which must justify its investment in terms of its return on capital. The many organisations involved with us in Prestel have similarly commercial or practical motives, and they are contributing resources to Prestel as a commercial exercise on good commercial grounds. The Post Office pays nothing to the TV set makers, TV set distributors, or directory publishers. We do not pay the Information Providers; indeed we charge them for the privilege of participating in Prestel, and pass back to them only the revenue their pages have actually earned.

The government departments and other public authorities participating in Prestel are doing so only insofar as they expect Prestel to be of solid practical use to them. This project is not supported by handouts from the government or anyone else. It has multiple sources of commercial financial backing. To retain that backing, we must run Prestel in a realistic and enterprising way; we must, above all, keep constant and close watch on the needs of the market place. This discipline represents, I believe, our strongest single protection against the risk of failure.

Progress To Date

At the time of writing (mid March 1979) the Prestel Test Service has 771 set users, of whom 432 are members of the market research sample, and the other 339 sets are in the premises of Information Providers, TV set firms, and the Post Office. The Prestel data base contains 146,000 pages of information, and is growing at a rate of more than 10,000 pages a month. This information, which is under the editorial control of the 160 organisations providing it, covers an extraordinary range of topics from accident prevention, accommodation, accounting, adoption and adult education, through microwave ovens, mortgages, motels, motor accessories, and shares, shipping, shopping, slimming, to unemployment, unit trusts, vaccination, vegetable growing, wine bars, yachting, and yoga.

It ranges from the seriously factual (eg, share prices, company accounts, travel timetables, national statistics) through unexpected items (eg, world records, classified advertisements, home encyclopaedias, prayers, poems, horoscopes, and giving to charity) to the frankly frivolous (eg, games, jokes, sports results and quizzes). Using the 'response page' feature, users can actually send pre-formatted messages, through Prestel, to an Information Provider. This service can be used for ordering leaflets or brochures, or for buying goods on a credit card.

The existing Information Providers include newspapers and magazines (eg, the 'Financial Times', 'New York Times', Express Newspapers, Eastern Counties Press, the Birmingham 'Post & Mail', the 'Economist', the International Publishing Corporation), news agencies (eg, Reuters, Extel, AP Dow Jones), retail and service firms (eg, Thomas Cook, W. H. Smith, Great Universal Stores, Currys), government departments (eg, the Central Statistical Office, Meteorological Office, Department of Prices and Consumer Protection), nationalised industries (eg, British Airways, British Rail), and large private companies (eg, ICI, GKN, Norwich Union, Barclays Bank, British Oxygen). We have already accepted bookings for 185,000 pages in Prestel, and have a queue of organisations waiting to book space as soon as we can build more storage capacity. With the whole of the British TV set industry involved in Prestel, more than a dozen different types of Prestel set will become available, during 1979, from High Street TV showrooms, for sale and rental.

At the end of March we broadened the present Test Service into a residential Prestel service throughout the London telephone area; later in 1979 Prestel will be extended to business as well as residential customers in London, Birmingham, Manchester, and Edinburgh.

But much of the hard work is still to come. For we are seeking to build, over the next several years, a single interlinked computer system capable of serving millions of customers. This task has never been attempted before, in the UK or elsewhere in the world. It throws up very complicated technical, operational, financial, commercial, and legal problems. It will take a lot of time and hard work to solve them.

Some readers of 'InterMedia' may wonder why this article is so preoccupied with our own parochial problems in launching Prestel, and hardly touches on the social, economic and international implications of this new type of service. I can only plead that we are in the thick of such a flurry of practical activity that it is difficult just now to stand back and reflect on the wider issues. I hope, in any case, that some of the strategies described above may be of relevance to other countries embarking on the provision of similar services.

You may wonder, too, about the strange choice of title. 'Fast and safe' refers, of course, to our policy of maximising speed and minimising risk. But why 'Flying'? Simply because Prestel shares with aeroplanes the peculiar characteristic that the faster you go, the safer you are. ■

The Author
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Writing on an Empty Screen

by Mike Bygrave

THE FIRST THING I noticed about Viewdata and Prestel was that the commonly-used initials of Viewdata are 'VD' and of Prestel 'PR'. An inauspicious start. The second thing I noticed came about 20 minutes after using the system for the first time. I made my phone call, pressed my keypad and, hey presto, pages appeared like magic on the screen before me. There were games, timetables, restaurant reviews, stock market quotes.

But when the button-pressing novelty wore off, I began to ask myself — what has any of this to do with me? Why do I need to have a Prestel set in my home? What *is* Prestel anyway — an encyclopaedia? A directory? An entertainment medium? An electronic newspaper? All these things rolled into one?

When I became involved professionally with Prestel, I looked for the answers to these questions. Amazingly, no one could tell me. And I had asked the people who have developed and promoted Prestel so far. I had asked people in each of the three main groups who had brought Prestel to the user — the Post Office, the TV set manufacturers and the Information Providers (IPs).

The truth is, each of these three parties is in Prestel for a reason or a motive which has little or nothing to do with the system itself. The Post Office care about the 5-10 million extra phone calls they hope the system will generate because that is where they'll make their money. The TV manufacturers care about the saturated market for colour TVs. They hope Prestel will make people change their sets — and, if not Prestel, any other innovation would do.

The IPs care most about Prestel as Prestel, but even their motives are mixed. Many IPs are big publishing or media companies who are in Prestel because they reckon they might as well be and because they don't want to be left out if the system should suddenly emerge as a rival to existing media. Other IPs are government or public bodies who are in Prestel because they're tired of being called stuffy and out-of-date. Having decided to become an IP, all too many companies have confined their Prestel operation to a couple of low-grade staff stuck off in a cupboard somewhere with a set and an editing terminal. In fact, if you look around the room at the average Prestel seminar, it is almost a living tableau of what is wrong with British business.

A Schizophrenic World

The result is that the world of Prestel professionals, small as it is, is a schizophrenic world. Because no one has thought about or answered the fundamental questions, it's considered in bad taste to ask them. Professional seminars concentrate on the minutiae of design and editing. Controversies rage over the colour red or the use of capitals versus lower case. In fact, an informal consensus already exists among the best IPs as to the nuts and bolts of presentation. We already know how to design and edit an attractive page. What we don't know is what to put on it.

The most fundamental question you can ask about Prestel is, what is it? The best answer so far is, it's not what you think. Most newcomers to Prestel see it as an encyclopaedic medium. The size of the screen, the very fact of having a computer involved, together with the Post Office's early presentations, make you think of a memory bank, a library, a store of data from which the user can select. Certainly the overwhelming majority of IPs think of Prestel in that way and, in the manner of a self-fulfilling prophecy, most of the information available through Prestel today is directory-type information.

Not Encyclopaedic

But Prestel's encyclopaedic nature is illusory. With all its hundreds of thousands of 'pages', the system cannot actually cope with any lengthy or complex set of information. Take timetables. It seems obvious that a mass medium, one day to be in every home, should carry rail timetables. Every user would be able to press a few buttons and the timetable he needs would flash up on the screen. Such miracles of convenience are what the march of science is all about. Unfortunately, it's never going to happen. Putting up all the rail timetables for the UK is technically impossible on Prestel. It would overwhelm the 'tree' system, the 'menu' method of access. So, to take another example, would the current contents of any magazine or newspaper you care to mention.

As an information medium, Prestel is — must be — highly selective. In fact, it is more selective, more partial, more limited than competitive media presenting the same information. 'Time Out' magazine, published each week, price 35p, has 96 or more pages listing all the films, plays, operas, etc, showing in London. To put that magazine on Prestel each week would cost the rental of thousands of 'pages', whole banks of editing terminals, numerous editors/programmers and huge telephone charges; and the user would never be able to find his way around it, anyway. No, Prestel isn't going to list every film that is showing in London. It's going to show you 'The Top Ten Films in London This Week' or 'The Best Six Chinese Restaurants in Ipswich'.

So there is already occurring one crucial reversal of expectations about Prestel. Sold (to IPs) and still considered as a hard-data, encyclopaedic information retrieval system, Prestel is turning out to be nothing of the kind.

But, what *is* it? Well, one thing it could be is a medium

for text instead of directory information. It could be journalistic. News is always expensive to gather and disseminate and until a very large 'audience' of Prestel users exists it's very unlikely any IP is even going to contemplate journalism on Prestel. Even then, it's hard to see how text on Prestel could be organised to pay. Most news or current affairs media pass on only a portion of their costs to the consumer, making the balance up in advertising revenue. Yet it's not clear how a traditional 'package' of text and advertisements, could work on Prestel. And, as I say, no one is even going to think about it until Prestel has already 'succeeded' as a medium in terms of its numbers of users.

This 'Catch 22' situation has dogged Prestel from the start. It's been overcome only partially and then only on the side of directory information. In other words, advertisers on Prestel now are self-advertisers. Where newspapers have become IPs, they have tended to confine their Prestel material to local events or eating guides, plus other kinds of hard information, perhaps with the odd 'news headline' thrown in.

However, some work has been done on the full use of text on Prestel (mainly under the Post Office Editorial Development Contract, held by Mills and Allen Communications). I've done some of it myself. I took a current affairs topic — the debate over 'Law and Order' — which could have formed the basis for a magazine article, newspaper leader, or 'think piece' and tried to put it on Prestel.

DENNIS THE MENACE

"I HATE TELEBISHION WHEN IT WRITES STUFF AT YA!"

International Herald Tribune, 19 June 1978

As a text medium, Prestel's disadvantages are several. Each 'page' or screen actually contains no more than 80-90 words (the maximum is 150 words a page, but the need to be legible and attractive reduces you to around 80-90). The logic of Prestel seems to dictate that each page should be complete in itself. You mustn't break off in mid-sentence, and you need to think carefully if you're going to break off in mid-argument. Worse, some of your precious 80-90 words must be spent routeing the user to your next page or pages.

Simplifying to Absurdity

Journalists are used to simplifying. Part of our job every day is to take complex sets of facts or chains of events and marshal them into stories of a set length. A thousand words, 500 hundred words, 250 words, yes — but 80 or 90? The simplification is so radical that one is bound to ask if it isn't going to distort to the point of absurdity. Can you really present any serious issue fairly when you're working at that sort of length?

I don't think my own experiments, or parallel ones by Douglas Evans and Tim Hodlin, conclusively answered that doubt. But it did show you could make a good try. It's difficult. The actual process of writing, of picking those 80-90 words, becomes a much larger element of 'writing the story' than it does in conventional journalism, where the bulk of the effort probably goes into collecting the facts, checking sources etc. . .

Not only is it a technical exercise to work so small, but I found myself aware of and having to deal with the issue of fairness — or fidelity — on almost every 'page'. How far can you edit down a quote, for instance? How cryptically can you summarise a political argument? With so few words possible, the danger of using emotive ones is somehow multiplied — as is the temptation to use them!

Crippling though the constraints of Prestel may seem, it has one great advantage, one new toy for the journalist. It is a dynamic medium. Nothing happens until the user presses a button and the user himself chooses where he will go next. Or rather, you as an IP provide a set of choices for him. That's why I chose a debate, a controversy, to put on to Prestel, because it has two (or more) sides.

The user can participate in the controversy himself, or have the illusion of doing so. On subjects like Northern Ireland, race and immigration, detente, etc, there are widespread popular prejudices, pub philosophy, if you like. Using Prestel, you can start with the prejudices and get the user to test them against the facts all along the line, perhaps ending up by using one of Prestel's response pages to conduct some kind of informal referendum of user's views.

Special Pleadings

As you see, I am already way beyond the boundaries of journalism. Into what? Propaganda? Education? Grass Roots Politics? There is no authority like the BBC or IBA in Prestel, at least not yet. There is no commitment, beyond a purely personal one, to ideas of fairness, balance or objectivity in writing Prestel text. On the contrary, the

medium is set up to offer unlimited access to anyone who pays (and commercial bureaux can sub-lease pages to small IPs, even individuals). Maybe it *should* be a collection of special pleadings. The Provisional Sinn Fein could rent a few pages tomorrow, creating an interesting situation where their views are effectively banned on broadcast TV and radio but could turn up on your TV set via Prestel.

On the other hand, as soon as you start thinking how journalism on Prestel could evolve, clearly there *would* be 'publishers', there *would* be heavy investors bringing together teams of journalists and large numbers of pages and creating an identity for their product. As soon as that happened, standards and procedures would evolve. The 'free-for-all' aspect of writing for Prestel would be reined in. The interesting question is, how far would it be reined in? Where along the spectrum from total objectivity to outright propaganda would Prestel journalism settle down? With luck, it could settle for a much more individual expression, a franker 'bias' if you like, than the artificial and much-criticised 'balance' of the broadcasting establishment.

Prestel and Education

The other basic question about text on Prestel is, who is going to read it? Of course, the same question applies to directory-type information, but somehow it's easier to imagine a user punching his buttons for the 'Top 10' films or the London to Cambridge train times than for a programme on 'Law and Order'. After all, the argument might run, there is so much free or dirt-cheap news and current affairs around already, who will pay to see more? Instead of answering that argument, let me sidestep it.

One thing my experiment convinced me is that Prestel is a brilliant educational medium. Indeed, given the simplification involved, it may even push a journalist working in it towards writing for, say, 6th formers or people in their first year at university rather than the full adult audience. There are already certain scientific programmes on Prestel, including a completely impenetrable one about a dying patient, made for medical students. But Prestel's choice element, its mildly interactive nature, make it equally suitable for arts or current affairs material. And here, of course, we have shifted the question from, 'who is going to pay to see it?' to, 'who is going to pay to put the material up on the screen?'

Directory-information, mainstream journalism, education. Those are three approaches to Prestel for the writer. There is a fourth, and current indications are that it may be the biggest, or most 'correct' of all. We have seen that nobody knows what Prestel is, and we've looked at some possible answers. A different answer might be, *Prestel will be whatever the users want it to be.*

Since it is always possible for an IP to discover how many times his pages have been accessed, and since his profit depends on that figure, the 'ratings battle' will be fiercer and more detailed on Prestel even than it is in the broadcating media. IPs will be able literally to 'give the people what they want'. Hence the passionate interest among IPs in the early responses from the Post Office's test service, now in operation. The Post Office market research is secret to IPs and I can't discuss it here. But I can say this. There has always been a number of Prestel professionals, myself included, who felt the 'directory-type' approach was wrong. We felt Prestel was a softer medium than that, more of an entertainment medium, and that people would use it as much for fun as for hard information. To make a comparison with existing media (always dangerous, I know) we saw Prestel not as an encyclopaedia, or a directory, or a newspaper — though it could be all those things as well — but as a general interest magazine.

A Consumer's Medium

Prestel can only survive and prosper by convincing a mass audience and we felt that its audience, at least initially, would want to have fun. We were keen on horoscopes on Prestel, games on Prestel, cookery and gardening on Prestel, maybe even sex on Prestel. In other words, we tried to put a model of the user, the consumer, at the centre of our thinking rather than a model of the medium. Of course, this approach begs as many questions as it answers. In print, general interest magazines have sold only to women. Men prefer to buy magazines devoted to a particular interest, like cameras or cars. If Prestel does turn out to be a general interest magazine, where does that leave men?

Still, I believe the consumer approach, at least for the first years of Prestel, will turn out to be the right one. Which means there is going to be a rapidly developing demand for writers by this new medium. No longer will IPs be able to run their operations with an upgraded secretary and a superfluous junior manager. Once the emphasis moves away from directory-type information, IPs will need editors and writers who are experienced in journalism, book-writing, script-writing or whatever. Ironically, those writers are going to face the very same problem that faced the very first IP on the first day he or she took delivery of the first Prestel editing terminal, and which is still, today, the crucial problem of Prestel — what shall I put on the page? ■

The Author
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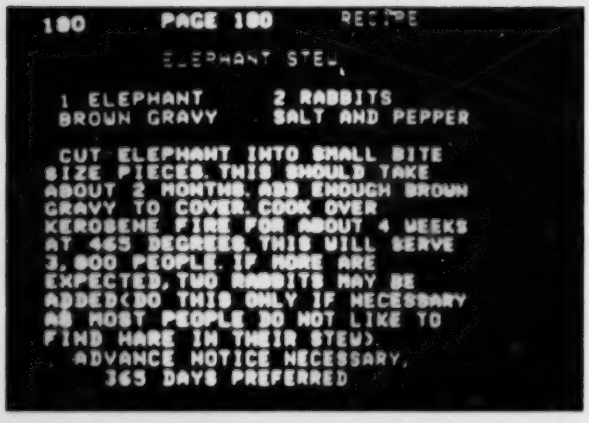
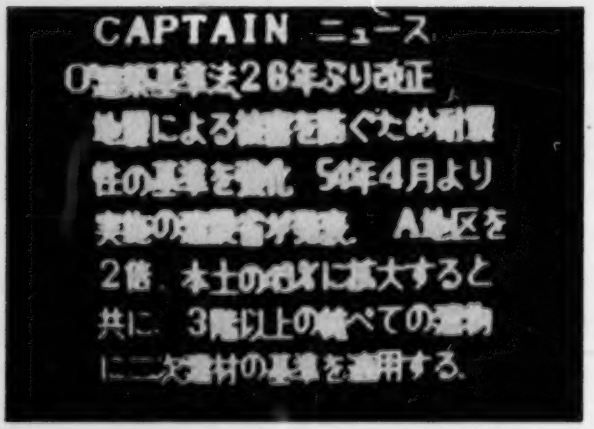
Different Countries, Different Systems


180 PAGE 180 RECIPE
ELEPHANT STEW
1 ELEPHANT 2 RABBITS
BROWN GRAVY SALT AND PEPPER
CUT ELEPHANT INTO SMALL BITE SIZE PIECES. THIS SHOULD TAKE ABOUT 2 MONTHS. ADD ENOUGH BROWN GRAVY TO COVER. COOK OVER KEROSENE FIRE FOR ABOUT 4 WEEKS AT 465 DEGREES. THIS WILL SERVE 3,800 PEOPLE. IF MORE ARE EXPECTED, TWO RABBITS MAY BE ADDED(DO THIS ONLY IF NECESSARY AS MOST PEOPLE DO NOT LIKE TO FIND HARE IN THEIR STEW)
ADVANCE NOTICE NECESSARY, 365 DAYS PREFERRED



SO FAR this survey has dealt mainly with Prestel, the British system of videotex. Now, we look at four other countries which are rapidly developing their own videotex services. They are Canada, France, Japan and Germany.

The operation of Prestel has been guided and influenced, alternatively given momentum and held back, by the UK's special set of telecommunciations regulation, by the manufacturing industries, the advertising business, the willingness of public and private organisations to become Information Providers, and many other factors. In other countries, each of these factors works differently. In North America the telephone companies, and the TV stations, are more directly within the same marketplace. In France, the opposite is true, and the government's approach is much more integrated. Its broadcast videotex services are being interleaved, as it were, with its telephone-based videotex services; and both are developing in parallel with the spread of yet other manifestations of computer communications, including telefacsimile and telecopier.

Japan has the extra factor of the Katakana alphabet, with its numerous characters. The Japanese Captain system therefore has to locate most of its 'intelligence' in the centre, not in the individual terminal. Yet some people are turning this issue to an advantage, and suggesting the advent of Captain is a welcome opportunity of providing the business sector, and others, with an English-language data system.

In Germany, progress towards any kind of videotex has been virtually halted by the conflicts between broadcasters and press. There is no doubt that the Germans have the technological potential and the marketing skill to produce and operate videotex services of many different kinds. The Bundespost, in fact, was the first country to reach a deal with the UK Post Office for the use of the Prestel software. But for the last two or three years neither the broadcasters nor the press, nor anyone else, has managed to get even close to starting a full service.

All these various systems contain a promise of more, and more open, communications. It is said that the old paternal institutions are being shouldered aside by a myriad of smaller, independent organisations which use the new technological devices to communicate with each other. Is this true? In our final article, Anthony Smith asks if the growth of consumerism might not engender a set of regulations and conventions just as rigid and exclusive as the old paternalism. ■

Canada: Major Support for Telidon

by John Sifton, and David Wright, DOC

ON 2 APRIL 1979 Canada's Federal Communications Minister, Jeanne Sauvé, announced the government's commitment of nine million dollars in support of the videotex technology, Telidon, that has been developed in her department's research laboratories. The nine million dollars is expected to be more than matched by the grants from the Canadian private sector over the next four years. About three million dollars is to be spent in the current financial year.

The money is to be largely spent in assisting Canadian industry to develop the necessary range of products, and in assisting the Canadian organisations who are sponsoring the field trials to pay the cost of the trials. The costs will be artificially high because Telidon has not yet reached its full production status. In her announcement, Mme Sauvé, said that she envisaged a continuing and cooperative industry-government effort to develop Telidon.

At least four field trials are being held this year. They will test the system's technical capabilities, its interface with a variety of new and existing telecommunications technologies, and its relevance to a host of possible home, industrial and institutional users. Two of these trials have already commenced. Meanwhile, public and media interest in the system is mounting.

Telidon, the focus of all this activity and interest, differs in several important respects from the videotex systems being developed in Europe. All these technologies, however, will eventually permit a user to retrieve, at a reasonable cost, textual and graphic information from any number of data banks plugged into the system, or even to communicate with another user. In short, all have the potential to precipitate a revolution in the provision of information and other services to the general public and the more specialized user. Teleshopping, electronic newspapers, remote security services, telebanking and a host of other services may all be part of our lives in the 1980s.

Canada as mapped by Telidon, showing the high resolution possible

Canada as mapped by the "pieces of a picture" technique of other videotex systems

Telidon has been developed by the Communications Research Centre (CRC), the research facility of the Canadian Department of Communications (DOC). It has three main components: a slightly modified television set or display monitor equipped with a micro-computer, some associated electronics and a keypad; a telecommunications network; and a central computer. The nature and configuration of some of these components can be varied with unprecedented flexibility to meet the specific needs of a user.

At the simplest level, the user could phone a data bank and, by punching a few buttons on a keypad terminal, retrieve pages of information for display on his modified TV set. With a keyboard terminal, a business user with more sophisticated needs could exchange information with a friend or colleague possessing a similar unit. Both keypad and keyboard could be operated remotely from the display unit.

Transmission between users, and between them and data banks, can be carried out by means of a telephone line, coaxial cable, optical fibre, off-air broadcast or some combination of all of these. In practice, some of these transmission modes are more likely than others.

The information transmitted could be either textual or graphic, or a combination of the two. Indeed, with a light pen, a user could draw on his TV screen, or he could manipulate a 'joy stick' to move a marker across the screen. In either case, this information could be transmitted to a distant colleague. In this way, two architects in consultation across a continent could share a single electronic blackboard — their own TV sets.

Graphic Information

The display of such precise *graphical* information is possible because Telidon images have a much higher resolution than can be achieved with the other systems that have been designed primarily for the display of *textual* information. In nearly all other systems, a page or image appears on the screen line by line, left to right.

In effect, the display screens of these systems are divided into a mosaic in which each square of the mosaic can be filled by a letter. These squares can be further subdivided into smaller squares for graphical displays, but not so much smaller that a diagonal line on the screen does not resemble a flight of stairs.

Telidon employs a geometric rather than a mosaic

approach to graphics. The system uses picture description instructions (PDIs) which describe or code images for display in terms of such basic geometric elements as a point, line, arc, rectangle or polygon. In other words, Telidon uses the natural language of drawing by building up an image progressively from its basic geometric elements. For this reason, it can achieve a much better resolution than other systems; while employing, on average, about 40% less network capacity.

Indeed, it is possible with Telidon to describe images with sufficient resolution to match the highest resolution monitors in the world, which are capable of displaying 4096 x 4096 (or even more) picture elements. A typical colour TV can resolve 240 x 320 elements. An important aspect of Telidon, however, is that it only interprets images up to the resolution required by whatever TV monitor is in use. Its coding is therefore adaptable to all display monitors in general use for the foreseeable future. For images indescribable in terms of the geometric elements, the system contains a photographic capability, which means that an image such as a photograph can be displayed on a point by point, facsimile-like, basis.

In effect, the picture description instructions are valid no matter what changes occur in the technology of display monitors. The data base coding is also independent of any particular type of terminal or communications medium used to transmit information to or between those terminals.

This difference between Telidon and other videotex systems has important consequences, as DOC image communications laboratory manager Herb Bown points out: "We wanted this independence because we know there are different rates of change for the terminal, transmission and data base management technologies. For example, existing communications are constantly being improved with fibre optics, satellite and other broadband services, as well as improvements in the telephone networks. We also know the resolution of TV itself may well be improved or it may even be replaced by a totally new display technology.

Storage is Independent

"It is important we adopt a methodology and an overall systems approach that permits the information storage to be independent of the delivery and receiving systems. Otherwise, we'll be stuck with a system approach with a life of about five years before much of the information in the data banks will have to be redone for the next generation of systems."

The terminals used in the Telidon system are also designed to be more versatile than those employed in other systems. The Telidon unit attached to a terminal is in reality a tiny computing device, and can serve as a minicomputer for home or office. It can also be easily modified to display signals from Prestel or Antiope, whereas the reverse is untrue. These 'smart' terminals can from a technical point of view also communicate directly with other terminals without the assistance of the central computer. Because of the graphic capabilities of the system, they can even display signatures accurately.

For the last few years, Norpak Ltd., a major Canadian manufacturer of computer display equipment, has been working closely with CRC researchers on Telidon. The company has already made 170 terminals about the size of an attaché case. In the short term, for the field trials, it plans to produce Telidion units the size of a telephone directory and selling at around $800 each. The first mass-market model, according to a company spokesman, would include about "10 integrated circuits mounted on a board which could be built right into the TV and which would be an option retailing for perhaps $200 or $250 which you could buy from your local TV retail outlet."

The field trials will test these terminals, as well as providing data for the development of technical standards and specifications for videotex systems. They will also supply data for developing new services and test the marketability of those already developed.

Bell Canada, the country's biggest telephone company, has already commenced a modest field trial in conjunction with two of Canada's largest newspaper interests. Bell will also test Telidon in its own Vista videotex trials. The purpose of the pilot project is to acquaint potential information suppliers and other interested groups with the capabilities of the system.

"We're genuinely impressed by the work CRC has done," commented Bell Canada business development group director Larry Wilson. "We've said we'd like to incorporate some of the CRC research in our pilot."

If the results of the pilot project are good, Bell intends in mid-1980 to carry out a market trial involving 1,000 to 2,000 terminals to ascertain, according to Wilson, "the kind of information and the kinds of prices the people are willing to pay for systems and information and terminals." A successful market trial would mean commercial introduction of the system in early 1982.

Two Experiments

A subsidiary of one of Canada's largest cable systems (Canadian Cablesystems Ltd, which is linked to Rogers Telecommunications Ltd, Toronto) also plans some small market trials using two-way TV technology. Its purpose is to test the commercial potential of Telidon and a version of the British Ceefax system as marketed in the United States, as well as to assess consumer acceptance of a variety of different information services.

"If the response is positive, we'll just keep expanding until it covers the whole system," said a spokesman for the cable firm. "We suspect business users will respond more positively at first but that interest by the public will grow in the longer term."

The information offerings will include news, weather, entertainment schedules, stock transactions, produce prices and "maybe comparative shopping prices," said the cable official. "If there's a demand, we may go to more specialised information. With Telidon, we'd like to offer a service to car dealers, for example, where they can get the latest information from Detroit on parts and description of parts with 'exploded' diagrams. Then we'll know if the graphics can be used in a commercial environment."

Later this year, the DOC will, in co-operation with the

publicly-owned Manitoba Telephone System, conduct in a small western Canadian community a $5 million field trial using Telidon in conjunction with fibre optics technology. Some 150 households will for the first time receive single-party-line telephone services, at least five TV channels, FM radio and some two-way computer signals for experiments in tele-shopping and information services.

In September, the Ontario Educational Communications Authority (OECA), an agency of the provincial government, will carry out a Telidon trial on TV Ontario, its extensive educational TV network. The project is planned to last through the school year. It will start with a simple one-way transmission through the network, and then move to interactive information-retrieval from existing data banks and conclude with experiments involving computer-based learning systems.

"The information we generate would mostly be educational in nature although we are willing to co-operate with other information providers," said one OECA spokesman. "We would provide information such as programme schedules by subject area, grade area, and area of interest as well as information of interest to school boards, about the status of school buses, captioning for the hearing impaired, programme notes, limited computer-based learning, and so on." OECA also plans to co-operate with two other provincial educational TV networks in a related research project on the uses of Telidon in computer-aided teaching systems.

Until these field and marketing trials are performed, there can be no certainty that a genuine need — or at least a potential demand — exists for the services provided by Telidon or any other two-way information retrieval system. Some argue such systems can never appeal to more than a select clientele interested only in information retrieval services — businessmen, government officials and educational institutions.

Flooding the Mass Market

Conversely, some market-researchers maintain that systems like a Telidon network, if introduced carefully, could flood the mass market, less because of the enhanced information-retrieval capabilities associated with networking than the improved possibility for innovative and substantive services in a network situation. Such services as telebanking, computerised education, teleshopping, remote security services, electronic ticket-buying (where you have a display of the theatre seating arrangements before making your purchase), electronic games, and electronic workplaces in the home (which save a trip to the office) would be the trend of the future, according to these marketing analysts. The caveat is, of course, that more such imaginative new services must be developed, and then aggressively marketed. In short, if the system is to be as saleable as possible, the system must be transparent to the user and as compatible within itself and with other networks as possible. Hence, standards are an important aspect of Telidon activity.

The DOC and CRC are already working to clarify the requirements such standards must meet. These include ensuring: compatibility between consumer-owned terminals and all two-way TV networks in Canada, compatibility between terminals, compatibility between data bases, compatibility between databases and terminals, interoperability between different types of information services and between communication modes, and the subscriber's presentation of common user access procedures for all two-way TV databases.

But, ideally, neither Canada nor any country need go it alone in developing standards. Long-distance telephone lines and satellite hook-ups hold potential for global videotex networks. For this reason, Canada has, during the past year, been discussing with other countries how to develop international standards for this new technology in such world forums as the International Consultative Committee for Telegraph and Telephone (CCITT), a branch of the International Telecommunication Union.

A major concern during CCITT meetings last autumn was the standards for graphic character sets used in two-way TV systems. The meeting accepted the following statement of principle: "There should be a maximum of independence between transmission characteristics and the picture structure, having due regard to the requirements for the economic implementation of terminals."

The Canadian picture description instructions, involving a geometric approach to graphics, was also accepted for consideration as a possible standard, along with a the mosaic approach used by Prestel and other European systems.

While the DOC has been engaged in developing national and international standards for interactive television, it recognises that the introduction of a powerful new telecommunications medium might precipitate some substantial shifts in the structure of the Canadian telecommunications industry. Certainly this point is not lost on the telephone carriers.

Bell Canada, among others, intervened at a hearing held last November by the Canadian Radio Television and Telecommuniations Commission of application by cable companies for new services delivered via the TV. If the regulator approved the application, the telephone company spokesman said, it would be "a major step toward the emergence of a whole new group of telecommunications common carriers, in competition with the existing common carriers." Conversely, many cable operators believe their exclusion from interactive television would mean the stagnation of their growth prospects and their final relegation to impotence vis a vis the telephone companies. On 26 March the CRTC approved the cable companies' application for trials of the new services on a two-year experimental basis.

At the most general level, DOC is determined to ensure that the public has cheap and easy access to Telidon information sources, that providers of information encounter no barriers to reaching the public and marketing their wares, and finally that the introduction of Telidon benefits as much as possible all sectors of the Canadian manufacturing and service industries. ■

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France: A Total Approach to All Systems

by Bernard Marti, CCETT

IN FRANCE, as in many other countries, the national interest in text communication is growing rapidly. In each country, the national authorities may give different priorities to videotex, facsimile and teletex. Nevertheless the feeling that these services are converging, to some degree, is becoming much stronger, and is the basis of the philosophy of the standards proposed now by the French government for an international videotex service. The French standards follow two fundamental rules. The first is a complete and clear separation between the service and the network. The second is a clear definition of the different responsibilities of the carrier and the information provider.

These rules were not defined as clearly in 1973 when the first studies on broadcast videotex were initiated in the Centre Commun d'Etudes de Télévision et Télécommunications. It was the difficulty of adapting the closed and integrated structure of UK teletext to France's requirements that led the CCETT to look for another solution. But the characteristics of the French approach did not become completely clear until later.

From Didon to Antiope

The first stage in the development of what was to become 'Antiope', the broadcast videotex system, was the definition of a packet-switching data-broadcasting network called 'Didon'. The first experiments of a videotex service using Didon took place in September 1976 and the first full experimental service, delivering stock exchange information, started in May 1977. In the beginning, the transparency of the Didon network allowed the network problems to be held separate from the service aspects (eg, display standards) and those latter to be separate from the coding technique. This facility allowed the rapid establishment of Antiope services on the backs of existing databases, with the possibility of automatic lay-out and real-time updating by computer. The code table and extension technique were basically those of Prestel.

Joint Meeting

In the beginning of 1977 there was a need to demonstrate that these standards, which had been developed for broadcast videotex, could also be used for an interactive videotex service on a telecommunications network. In late August, therefore, a simple database was set up on the time-sharing facility of the scientific computer in the CCETT, and demonstrated at the Berlin Radio Fair. In preparation for this presentation, a high-rate line was leased between Berlin and Rennes. In this way, quite by chance, our network philosophy of videotex was born.

The most important direct consequence of the CCETT demonstrations at the Berlin Fair was that in January 1978 a meeting between the UK Prestel team, the German Bundespost and the CCETT was held in Rennes to define a possible European standard for videotex. The document produced at that time defined a standard which was different from Antiope but which allowed compatibility at the display level with both Prestel and Antiope. This proposal, as amended in a CEPT meeting in March 1978, and now supported by six national authorities, excluding the UK, is the basis on which manufacturers are working, at least in France.[2]

It is still not clear whether this standard will become the basis of an international standard. As a result, the structure of the Antiope decoder is based on a separation between display standards and coding standards. The information is transcoded from 16 bit words for display to 7 bit words for transmisison. The trade-off takes into account the present UK and French display standards to obtain a kind of common display characteristic. These standards thus allow the display of either present Prestel or Antiope pages on the same TV set, with no change in the receiver hardware.

The standards are based on two rules. Display attributes which are either common to both systems, (eg, foreground colour, flashing, the change from graphics to alphanumerics), or which are particular to Antiope (eg, video inversion), are defined at the character level. On the other hand, display attributes which are not used by Antiope but are used by Prestel (eg, background colour) are 'string defined'. A change in these characteristics is made by a delimiter, which is represented as a space. Because of the separation between display and coding, this space is not considered implicit in the code sequence, but is transmitted. The technique allows future terminals to be downward compatible and avoids the risk of the database becoming obsolescent.

The actual coding standards are simple, and are based on the code extension techniques of the International Standard Organisation's 2022 standards. The basic set, GO, is the International Alphabet No. 5. The secondary set, G1, is the block-graphic set. Accents and special letters are contained in a G2 set and the display control codes are in a C1 set. Accented characters are constructed by the transmission of codes which separately define both the accent and the graphic character to be modified. The final allocation of codes within the C1 table is under study; the aim here is to increase error performance in broadcast operations.

Interactive Trials Next Year

The standards described briefly above will be used in France's public broadcast videotex service (teletext) when

it opens in 1980, and in the public field trials of interactive videotex which is also planned in 1980, unless an international standard has been agreed in time. The deadline for such approval is generally felt by the manufacturers to be May 1979. But, as a change in character sets and coding standards affects only the decoders, the consequences of a premature choice are not as disastrous as might be feared.

The way in which the Antiope videotex service is organised, first on a national basis in France and then on an international basis, is of the greatest importance; so is the relationship with the country's existing networks and other systems or services of text communications. The proposed structure takes into account two main factors. First, the connection through the public telephone network should be limited to a local loop for reasons of cost and security. Long-distance telephony (especially international) is expensive and the signals generally become more impaired than does a local link. Second, a number of new public data networks not only offer transmission security but are priced according to the quantity of the information conveyed rather than the distance or the duration of the connection. Videotex must be competitive with these services.

In France, the telecommunication authority (PTT) is responsible for switching and transmission but not the content of the information. The content will be 'subscribed' by two categories of users: the information providers and the information retrievers. Although the former will be a minority, the service will have to offer them enough facilities to make their work worthwhile.

The system comprises four distinct elements: local access points; the data bases; the managing centre; and the broadcast videotex units. The local access point performs all the functions relating to subscribers. Its main job is to connect subscribers to the service through the general telephone network. The access point has a telephone number which is the local call number of the videotex service. It guides the subscriber in his choice of a database or of a particular service.

The data bases may be public or private. Most will probably be private but a public database may be provided for small information providers. This not really new: store-and-forward services already exist. What is new is that the information is stored by the PTT and transmitted under their responsibility.

A managing centre (or centres) will be used to send updated information to local subscribers; for instance, the menu of services available at a given time; the list of subscribers connected to it, with their passwords; the subscribers' directory; and all other necessary information.

The broadcast videotex units (BVUs) will receive information from diverse sources. It may come automatically from databases (as is the case in Antiope's Bourse stock exchange service and Meteo weather forecasts) or from authorised subscribers, either directly or through a database.

In each case, the management centre receives from the information providers the relevant instructions about the rules by which different editors are allowed to access a given part of the magazine, and from the broacasting authorities information on the present state of the television network (eg, the number of TV lines available, and the particular bit rates allocated to each data channel). The centre can thus update the BVUs.

One of these videotex units may 'drive' the television network on a national basis while another adds regional or local magazines. The structure allows the complete decentralisation of information broadcasting, without precluding the implementation of nationwide services. All these different elements may operate as a closed user group, such as Transpac.

In France, the intention is not to limit the compatibility between broacast and interactive videotex to the level of display (in which case, the display processor would be the only common part). We wish to expand it to the level of coding. Compatibility thus concerns the decoding processor of receivers, databases, and storage archives and even involves the network level for protocols and interworking between databases and broadcast units.

Antiope's Stock Exchange Service

One simple example will illustrate the Antiope structure. The Paris Stock Exchange is open daily from 12.30 pm to 4 pm. While it is open, information on prices, issues, etc, varies quickly, and is of considerable interest to all subscribers simultaneously. It is worth *broadcasting* this information on a short cycle time (currently, 82 pages with a 6 second mean waiting time). Outside opening times, the information is not of interest to everyone at the same time, and so is available *via the telephone network* by means of interactive retrieval. An economical trade-off is thus reached in terms of network and processing costs for the user. This simple example illustrates why the same coding standards will be used for all videotex services, whatever kind of network is involved.

The same philosophy applies to considerations about interworking Antiope with teletex and even with telefacsimile.[3] The teletex subscriber must be allowed to be an information provider for the videotex service, and also to retrieve information. The networks involved being the same, the problems that could occur will be greatly simplified by the use of a unique coding scheme.[1]

Interworking with facsimile is of great interest in countries such as France (and Japan) where low-cost facsimile machines for the general public are being developed. When domestic facsimile and videotex are widely available, it will be possible to treat facsimile equipment as a peripheral device of the videotex receiver, not only for hard copying from the screen but also to receive electronic mail in a character mode and convert it locally to a facsimile mode.

This combination of two machines (which should soon be in common use) provides, as well as the normal facilities, the possibility of a message communication service on both data and broadcast networks. A service of this nature will permit not only office-to-office correspondence but also, and therein lies its main interest, correspondence originated by offices for domestic addresses. This correspondence has been said to represent 39% of the total flow

of typed mail.[4]

In France, there is a distinct trend towards the use of a 2,400 bit rate for the videotex service, instead of the possible alternatives of 300 or 1,200 bits per second. The 2,400 rate allows a page to be transmitted in four seconds, and gives a better service. A major factor in its favour is its suitability of interworking with facsimile. For such work, the lower speeds would not have been fast enough: the mean time to transmit a page at 1,200 bits/second would have been four minutes. On the other hand, a modem for the even higher rate of 4,800 bits/second does not give enough security on present telephone networks. So, the 2,400 bits/second rate appears to be a good trade-off between quality and security.

The French network structure may solve some of the regulatory problems that have already occurred in other countries, and lead to a better acceptance of videotex by traditional information providers like newspaper editors. The data broadcasting network allows the available data rate to be shared between several providers, because the storage resource of the public database may also be shared between the providers (in the same way that the transmission capability of a public network is shared between subscribers). It is clear that the Information Providers are a new category of network user and the videotex service will be a public service only if the PTT makes no more difference between them than it has done between network subscribers.

Audio-graphic Videotex

Facilities for high-resolution graphics cost a little more because they have higher requirements for memory. However, various such devices already exist and are in operation in France in audio-conferencing systems for teledrawing and telewriting. The Dutch are also using them to broadcast educational programmes. The possibility of broadcasting or transmitting data with audio information gives rise to an entirely new kind of videotex service — the 'audio-graphic' videotex. Experiments are under way in this field in several countries.

These trends are merging with yet another important development — the home computer. The home terminal is set to gain local intelligence, local processing capabilities and the ability to receive alpha-graphic information on a remote basis. It will need new information, in addition to pages and sound and television pictures.

The Antiope *broadcast* service is not yet open to the public. Some industrial problems remain to be solved and some regulations have still to be prepared. However, the relevant authorities have already arranged that the public service will start in 1980, when a significant part of the VHF television network will become free. For the time being, the band is being used to broadcast TV programmes on 819-line standards. But these programmes are progressively being switched to a third UHF channel, where they are broadcast on 625 lines in colour.

At the same time, a public field trial of *interactive* videotex will be held for 3,000 subscribers in a small town near Paris. Numerous Information Providers, ranging from local to nationwide commercial firms, have already agreed to take part in this field trial.

And after that? The technology is both developing and being superseded so fast that, even before the service is open, one must look towards the future. The key to the future is that fundamental requirement, a scheme for open coding. With open coding, memory will be much cheaper.

The systems put in operation now must be designed so that they can incorporate the new graphic facilities. Videotex is likely to evolve into a real graphic communication service. A keen desire for high-resolution graphics in the near future has already been expressed by Canada and some other countries in the first meeting of the CCITT's videotex working parties.

The only way to reach this goal, whilst retaining compatibility with existing databases and without having to convert them according to future new standards, is to have an explicit coding, based on the service requirement and not on the properties of a given network. This principle was the reason why the Antiope videotex system was designed the way it was, and why work on it will continue in this way. In this policy, we have been greatly helped by the flexible structures that have been chosen for both the network and the terminal. ■

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Japan: The Search for a Personal Information Medium

by Tetsuro Tomita, Ministry of Posts and Telecommunications

THE DEVELOPMENT of new systems and services of transportation and communications has shortened time and distance, and narrowed many economic gaps. It is now more than ten years since Japan began to change its orientation from that of an industrial society to that of an information-oriented society as a result of the greater speed in the flow of information and the increase in the volume of information that was being distributed. During this time, against the background of the development of telecommunications technologies and the application of the techniques of large scale integration (the 'miracle chip'), the business world has undergone a big change. The availability of information has also changed greatly due to advances and diversification in such information media as television broadcasting, newspapers and other publications.

In order to grasp the extent of this increased flow of information, the Ministry of Posts and Telecommunications has conducted an 'Information Flow Census' every year since 1973. This census measures the information flow in various media, by means of a common unit, and an effort is made to grasp the overall quantitative flow. In this way, the ministry can predict the trends of development and facilitate the compilation of information indices.

The movements in the volume of Japan's information flow, both supplied and consumed, from 1960 to 1975, are highly relevant. In those 15 years the volume of information that was *supplied* showed a remarkable increase of about eight times, due to the explosive nationwide spread of television receivers and the start of colour broadcasts. In contrast, the volume of information *consumed*, which was dependent on such factors as living and working hours and the increase of population, show comparatively little change. In fact, information consumption in those years only doubled. As a result, the rate of increase of information consumption, which averaged 40.8% for all media in 1960, fell to less than 10% in 1975. It was this imbalance between information supply and consumption that created the age of information excess — described as a "flood of information". Instead of allowing ourselves to be overwhelmed, we should develop positive uses for this information.

Reflecting the basic stance towards mass communications up to now, the psychologist F. Matson has made the pertinent statement: "The study of mass communications that has been conducted since the 1940s has concentrated solely on the process whereby the media have manipulated and influenced people. From the standpoint of daily life, however, it seems that each individual selects and combines whatever is suitable for him from among the information sent out by the media. Although the mass media continue to send out information indiscriminately, the receiver does not necessarily succumb indiscriminately to this information bombardment. Therefore, instead of the concept of the mass media manipulating the general public, the general public should be considered from the humanistic standpoint of how people use information in their daily lives" (From 'The Science of Information Gathering' by Hidetoshi Kato).

When considering the use of information in this age of information excess, we should give priority to the detailed information that meets individual needs rather than the uniform information carried by such mass media as television and newspapers. It follows naturally that we must develop new information media to expand the individual's scope for selecting information. Let us look at the existing communications media from this standpoint. In present-day society, practically all the information needed for daily life and for business is obtained from the communications media. These media are unable, however, to provide enough specific individual information to meet individual needs at any time, everywhere, to everyone, and at a low cost.

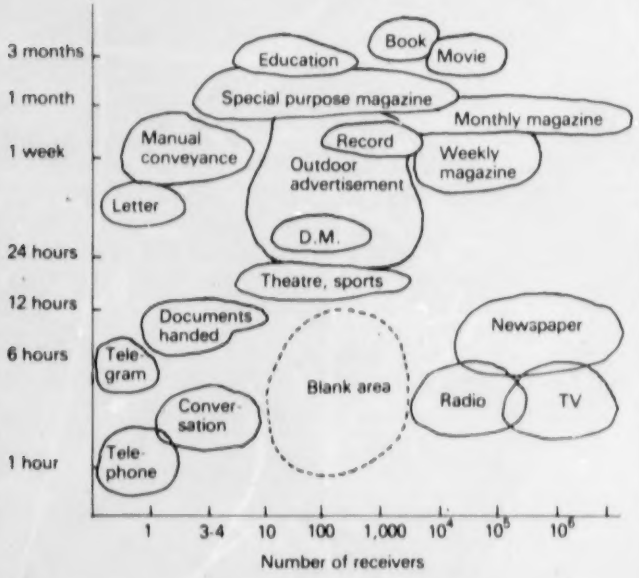
Mass communications media like television suffer from irreducible limitations on their allocations for news broadcasting, and an adequate system for meeting individual information needs has not been found. Such needs are for news outside the fixed broadcasting time and for reports in fields in which one is interested but which are not covered by the regular broadcasts. To obtain this kind of information by personal communications media (such as the telephone) instantly entails the problem of cost.

The present situation, in terms of the number of information receivers and the usual time of reception, is shown in Figure 1. The blank area in this chart is the area of the new information media which meet individual information desires. Such media may be called 'individual information content service media'. The telephone information service should be mentioned first of all. Since starting in 1969, this popular service has expanded to include 2,707 programmes and 13,522 circuits at the end of 1977. How perfectly this service matches needs is evident from its expansion by 118 times between 1969 and 1974; an annual growth rate of 180%.

Still, this service is limited to voice information. Both the number of channels and the kinds of services are limited. The service is not provided systematically in an organised manner. It therefore does not necessarily match the needs for highly advanced and diversified information media.

For that reason, research and development are being conducted on systems that will provide individual information through image communications. The systems include

the CCIS (Community Communications Information System) experiments with the use of CATV at Tama New Town, and Hi-OVIS (Highly Interactive Optical Video Information System) experiments at Higashi Ikoma in Nara Prefecture. These systems require the construction of new transmission cables, however, and the cost of these transmission routes is high. Moreover the routes are intended for one-way broadcasting, and it is rather difficult for them



to provide individual information interactively. Thus, there is little possibility of these systems coming into practical use.

The Concept of Captain

In order to overcome these difficulties and provide a true individual information service the Ministry of Posts and Telecommunications is developing the Captain (Character and Pattern Telephone Access Information Network) system. Captain is a two-way data and information system designed to provide individual information at all times and places, to everyone, and at a low cost.

Several years before the first report of Prestel (then called Viewdata) reached Japan, those concerned with telecommunications in many fields thought of the possibility of a Prestel-type information system in Japan. The biggest problem encountered was that of the Chinese ideographs used in Japanese writing. Newspapers in Japan use more than 4,000 of these characters.

To build a Prestel-type decoder for Japan would require a ROM (read-only-memory) of 700-800K bits. The scale of this memory can be gauged by noting that the Prestel decoder has a ROM of 8K bits. The cost of the Japanese memory — apart from anything else — would be staggering. To pursue this strategy would be synonymous with putting into the home an adaptor that costs about the same as a business terminal for data communications.

One of the services in the CCIS experiments at Tama New Town offered 'flash information'. The Tama Centre possessed a 8K bit RAM (random access memory) with a capacity equivalent to 16 characters per line. The characters were generated at the centre and then sent multiplexed on the vertical flyback line of a signal that was rebroadcasting a TV programme. Since one line of information is too short to carry a complete news item, the 'flash' characters move continuously across the screen from right to left. In the experiment the 'flash' images came out clearly. Although both the centre and the terminals had technical problems, the service proved extremely popular with sample viewers.

Moreover, by 1973, when the flash information service started, the cost of RAM memories had greatly decreased and it was simple enough to build a RAM memory with the 50K bit needed to display characters on the entire TV screen. After experiments in data communications techniques, it was fully possible to transmit character signals as dot patterns of 2,400 bps or 4,800 bps over the ordinary telephone switching network. There were also ample prospects, with the Tama Centre's large-capacity magnetic disc equipment, for accumulating several million frames of character code information. Above all, and a very important factor favouring the eventual diffusion of this system, was the existence of Japan's telephone network with 35 million telephone subscribers and an estimated 30 million TV sets.

Against this favourable background the Ministry of Posts and Telecommunications decided informally in 1977 to start development of the Captain system. Since deskwork alone was considered insufficient to assure technical feasibility several manufacturers were commissioned in the autumn of 1978 to develop and build prototypes for the terminal adapter and a mock centre with minicomputer. When these were completed, in April 1978, the concept of the Captain system was released to the press and the ministry announced its intention, together with the Nippon Telegraph and Telephone public corporation (NTT), to conduct field trials in 1979.

Setting-up the Experiments

The Captain system's terminal equipment and the centre and peripheral equipment were already considered to be technically adequate. But it was felt that deskwork was, again, not enough for research into people's needs, economic conditions, and the content of the software to be developed. In order to study the system's future applications, therefore, the experiments have as their objective various trial uses by means of test installations established in areas of current social activity.

The end of 1979 was targeted for the start of the experiments. A Captain Centre at a telephone exchange office in Tokyo, with an information file of about 100,000 pages, will conduct experiments using about 1,000 telephone subscribers in Tokyo as monitors.

This Captain System Research and Development Centre was established in February 1979 under the guidance of the Ministry of Posts and Telecommunications, with the cooperation of the Nippon Telegraph and Telephone public corporation (NTT), Kokusai Denshin Denwa Co. Ltd.

(KDD), which is Japan's agency for international telecommunications, the Communications Industrial Association, and others. The aim is to promote experimental work and comprehensive investigation and research into a character pattern information system.

Information materials for the experiments will be contributed from organisations in the relevant fields, without charge. The organisations have a secretariat in the Captain Centre and their information materials will be input through the centre. The information suppliers have formed a Cooperative Association for the Provision of Information Materials. It is an entirely voluntary organisation, and has no special relationship to the system hardware concerned. As well as a section for overall planning, the association comprises five sections for human living in general, education, amusement, public affairs in general, and news. The method of handling information materials and other details will be studied and adjusted.

By the end of February 1979, 117 organisations had volunteered to cooperate. They include 20 newspaper companies, 22 advertising agencies, 25 publishing companies, 10 travel agencies, 10 department stores, and 21 public organs and broadcasting companies.

The user calls the Captain Centre by making a telephone call and then uses a 16-button keypad to request the desired information. There are two methods of selecting the classified number for each category of information. One is to follow a branch-like distribution network, and the other is to select the number directly (the numbers are printed in a directory distributed to subscribers).

The information on the centre's information file is converted by a character/pattern generator into characters/patterns and then edited in the sending memory. The characters/patterns on the sending memory are transmitted by telephone circuit to a terminal. Pattern signals recorded on the refresh memory by the terminal adapter are scanned, and appear on the television screen as characters or patterns. The display picture remains on the screen until the next request is made or the screen is switched off.

The volume of pattern information on one page of the system consists of eight vertical lines, each with fifteen characters, making a total of 120 characters in one frame. If the system is geared to the medium-size characters used for Japanese phonetic signs, the average total is 180 characters in one frame. With even smaller characters, it is possible to have 30 characters horizontally and sixteen lines vertically, or a total of 480 characters. One page can be printed on the screeen in 15-30 seconds.

Aiming for the Domestic Market

The information to be provided by the Captain system is very diverse. In the test phase, the aim will be to have 100,000 pages. What will be the pages' content? The business sector has already seen great advances of automation with computers and various kinds of data base services, so Captain may not be able to make much headway in this field. Rather, it should find a better market in providing general information (such as household guides to supermarkets and shops); educational information for primary school pupils and junior high-school students; and so-called 'Home News'. I also believe that a Captain system in a hotel could be a most valuable way of providing information for foreigners, who often face difficulties in Japan's completely different information environment.

The Future of Captain

With Captain, as in the case of Prestel in the UK and similar systems elsewhere, it is possible for the same adaptor to be used for both telephone-based and broadcast videotex, and research is now being conducted from many angles into the possibility of simultaneous use. The biggest difference between the two systems lies in the overwhelming difference in their volumes of information, and they can therefore be used compatibly as mutually compensating media. TV character multiplex broadcasting can report news that is suitable for brief announcements, while the Captain system can explain the detailed substance.

Future service functions will not be limited to the mere finding of information. Captain might provide an information processing service, wherein problems can be solved by conversing with the centre. Other diversified services, such as computer-assisted information (CAI), direct mail, and messenger services to replace telegrams of congratulations and condolences, are contemplated.

With this in mind, the second stage experiments will study the connection of the terminal's output not only to TV sets, but also to printers, for hard copy, and to cassette recorders for the storing of information. In order to assure a full range of conversations with the centre, it should also be possible to prepare a full keyboard of Japanese phonetic characters (say, 100) instead of merely the 16-button key-pad.

The commercialisation of the Captain system faces a number of problems. There will be an information charge per page, and an adaptor fee, in addition to the charge for communicating with the centre. Attempts are also being made to produce adaptors for commercial use at a cost of less than ¥100,000 per unit.

In parallel with the experiments, detailed studies will be conducted on such matters as,

- who should operate the centre?
- what is the legal relationship between carriers, the centre, and Information Providers?
- who should collect the information charge, and how should the carrier be authorised to use telephone tariff meters?
- who possesses the right to the information contents?
- how should the centre be authorised to compile or arrange the information contents?
- should advertisements be carried?
- how many centres should be dispersed throughout the nation?
- how will the multiplexer time extend to other telephone message areas in order to guarantee users local call access?

The Author
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Germany: A Battle Between Broadcasters and the Press

by Hans Kimmel, ZDF

IN THE PAST FEW YEARS West Germany has been remarkably hesitant about adopting the new electronic communication devices. Our cable systems are rudimentary, and confined to a few new suburban towns. The operators are not allowed to originate programmes since the legislators have not yet made up their mind as to who is going to have access to such origination. As for direct broadcast satellites, nobody except the TV industry and Radio-Tele-Luxembourg seem really keen for additional television programmes to be broadcast to the German public.

There are, of course, some marked differences in people's attitude towards the new services. They are mostly based on political utility. The ruling Social Democrat Party (SPD) tries to maintain the existing monopolies of the public service broadcasting systems, ARD and ZDF, while the opposition party, the Christian Democrat Union (CDU), vehemently argues in favour of opening broadcasting to private enterprise. The positions taken by the two big political parties on this question do not seem to be corollaries of their ideological principles but rather seem to be of a tactical nature.

The weakening of broadcasting's top management and, conversely, the increasing political affiliations of individual producers, who are becoming much more left-wing and who virtually cannot be sacked, makes it imperative for the ruling SPD to protect the existing situation and for the CDU to try to break it up by diversification. As for the pilot projects in cable, it is a fair guess that the government party of each Länd (state) in question will be in favour of it, and the opposition party against it.

This constellation of power politics carries over into teletext and videotex. Nobody seems to be in a hurry. There are obviously two main reasons for this reticence. Firstly, the report of the 'KtK' (the commission established by the federal government a few years ago to make a thorough technical investigation of national communications) very soberly and very bluntly stated that there are no urgent and immediate needs for any additional broadband telecommunication systems. The commission said that top priority should be given to narrowband systems that provide cheap, easily acceptable, and financially feasible person-to-person telecommunication; the telephone was the first example; telex, the second.

Secondly, the extreme dispersion of the relevant decision-making bodies in the fields of telecommunications and broadcasting does not make for brisk decisions. The federal government does not have any influence on broadcasting. Both TV and radio, and associated matters, are the responsibility of the Länder. It is thus the eleven state parliaments who regulate the two public service broadcasting systems (and both are under considerable and increasing party pressure). At the same time, however, the Federal Ministry of Posts and Telecommunications is the only licensing authority for technical matters, and the Bundespost (the Post Office, or PTT) is the only network carrier.

As for the politicians, like all (or almost all) politicians in the world they tend to feel that broadcasting should really be at their disposal On the other hand, there is a powerful press lobby which claims that private enterprise is necessary in broadcasting to safeguard or to bring about independence and pluralism of expression.

Conflict over Definitions

Under such circumstances it is not surprising that the development of videotex has got stuck in a battle about definitions. The main question is, are these new services really broadcasting or press? The German broadcasters have given the name of 'Videotext' (with a 't') to services which generate and transmit characters that are then broadcast through one of the three existing TV networks. The German Videotext is thus the equivalent of the British teletext, the French Antiope and other text systems distributed by radio waves. The broadcasters have coined another word, 'Bildschirmtext' (TV screen text), to designate text systems that are distributed through the telephone network.

The German press, meanwhile, clings stubbornly to their own vocabulary. They call all systems, howsoever distributed, by the name of 'Bildschirmzeitung' (TV screen newspaper or TV screen press).

Each definition proceeds from a different premise and is logically correct. From the press' point of view, a written text which stands alone, and does not necessarily accompany a moving picture, may be said to be 'press' regardless of whether it is printed on paper and delivered by mail or electronically generated and transported. For broadcasters, however, everything that is broadcast by radio waves (over the air or by cable) is broadcasting, be it a picture or a character. To them, the common factor is that the terminal is the TV set.

The relationship of German broadcasters and press has always been a very delicate one. The marked hostility of the German press towards the broadcasters is more than a personal whim of a Springer striving for power. It is a general feature, based on the belief that a public service broadcasting monopoly endangers the plurality of opinions, that it is professionally inferior and less efficient than private enterprises, and that it jeopardises the existence of a highly diversified and regionalised free press.

Both the broadcasters and the press demonstrated their systems during the biannual Berlin Radio Fair (Funkaus-

stellung) in 1977 and will repeat their performances during this year's fair. For the broadcasters, the intransigence with which the press claims an exclusive access to Videotext is difficult to understand. It seems to be a matter of principle rather than a matter of practical (and practicable) policy. The press would have to cooperate with the broadcasters whenever they (the press) use their system, as it depends on the broadcaster's signals and transmission time. Nevertheless, so far the press has rejected any idea of cooperation, in spite of the broadcasters' enthusiasm, thus forcing the broadcasters to abandon their initial willingness to think about some quantitative or qualitative criterion that will service the needs of both sides.

The broadcasters have been forced to develop a service which is free of charge to the customer, while the press project would have had to rely either on advertising or on an additional fee. As both ARD and ZDF are partly financed through advertising, both organisations have sufficient reason to worry about their financial future if advertising in a press-operated Videotext or Bildschirmtext proves attractive in the advertising market.

Bildschirmtext Trial Next Year

In the meantime the Federal Ministry of Posts and Telecommunications is preparing its first trial of Bildschirmtext. It will take place in Dusseldorf/Neuss and start on 2 January 1980. It is surprising how little interest the press has shown in Bildschirmtext and in the ministry's initiatives. According to the press, a Bildschirmtext transmission is not a broadcast because it does not aim at the general public as a whole. This opinion is doubtful enough by itself; but its implications are even more dangerous — and for the press, too. If a Bildschirmtext service distributed through the telephone network is not broadcasting, then the Länder are not competent to deal with it. But the governments of the Länder, of course, have contrary views; according to them, the distribution of a programme by means of cable is broadcasting and falls under their legislation, and licensing.

The situation is further complicated by the fact that for many years the Bundespost has been offering various kinds of programme information by telephone, yet neither the Länder nor the broadcasters have registered this fact or protested against it. Today, when the ministry is planning a similar service on the TV screen, the Länder are in the awkward position of opposing a federal activity (on TV) after tacitly accepting the Bundespost's similar services (audio broadcast by telephone) for many years.

The Länder are not prepared to fight it out with the federal authorities. A joint committee has been set up to look into both Videotext and Bildschirmtext, and the Bundespost has indicated that it would accept some kind of public authority which organises access but did not intervene in programme content. On this point, both the Länder and the press might agree and the press might well get the Länder out of their predicament. If the Länder can persuade the press to cooperate with the Bundespost over Bildschirmtext, they would avoid the possibility of having a federal ministry responsible for programmes that can be received on the TV screens. As for the press, the notion of an 'authority' is equally acceptable, because it does not touch the freedom of expression. In that case, the broadcasters would have to accept the virtual end of their broadcasting monopoly since, by the Länder's own definition, the press, in operating Bildschirmtext together with the Bundespost, would be operating a broadcasting service.

A Hopeless Battle

However, the press continue to claim that both Videotext and Bildschirmtext fall within their scope. It would seem that they are fighting a hopeless battle about Videotext. If the broadcasters really get down to it, they are likely to offer the better and cheaper broadcast service; at least, on the evidence of the 1977 Berlin Fair. On the other hand, the press stands a good opportunity of cooperating with the Bundespost and the Länder in the (wired) Bildschirmtext — if they decide to grasp it. In that case, too, they would have to sacrifice their cherished name of Bildschirmzeitung, because the Bundespost's network capacity would not only be used for press-type transmissions but would also, if not preponderantly, be used for data transmission as promoted by the Federal Ministries of Economy and of Research and Technology.

Meanwhile, the Bundespost is pushing ahead. It is the most interested party in the game, apart from industry, as they hope to lease the new facilities on a large scale. Any ideas of considering Videotext to be a transmission separate from the regular TV transmission (and thus implying a separate licence and a separate payment) seem to have been eclipsed. The broadcasters are on their way to Videotext now, with ARD pushing harder than ZDF as they have larger reserves of manpower. The two organisations have decided to gear their next Videotext test to the Bundespost's experiment with Bildschirmtext at the beginning of next year. Of course, the 1979 Berlin Fair will display all the contenders with all their offers and all their arguments.

It remains to be seen whether and to what extent the public will use the new services. If the public does use them, everybody will take that for a proof that there is a real need for these services. There is room for suspicion, however, that in the field of electronic communication more often than not the service does not answer a need but the need is created by the service. The secret pacemaker of society's heartbeat is the technician. ■

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The Birth of a Videotex Industry

by Roger Pye, CSP

VIDEOTEX SERVICES are one of the first manifestations of the much heralded 'convergence' of computer and communication technologies. The convergence itself is a common topic. What are less extensively discussed however are the implications of this convergence for the industries which have been conventionally based on those two technologies. Telephone-based videotex will directly affect and require the participation of all but one of the most powerful groups in the communication sector:

- the telecommunication carriers
- newspapers and other publishers
- television manufacturers
- telecommunication equipment manufacturers (for terminals, modems and switching equipment).

The other powerful group of communication actors, of course, is the broadcasters. And as the telephone-based videotex services are complementary and partially competitive with broadcast videotex (teletext) services, the broadcasters are also likely to become involved in this new industry.

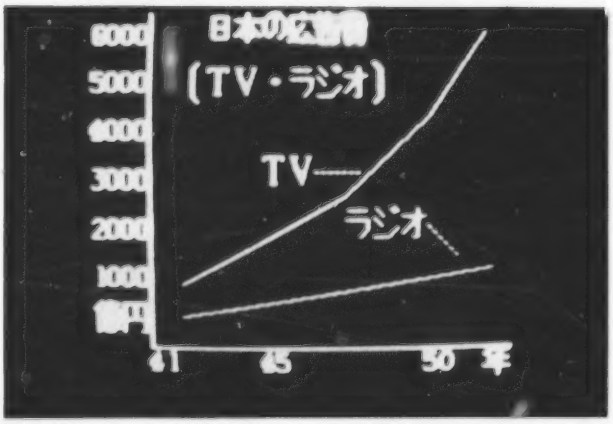
A major complication is that the service industries are so different institutionally. Telecommunication carriers are government agencies or government-owned companies in Europe, and regulated companies in North America. In Europe, these carriers always have a monopoly of communication service. In North America the carriers often have a more restricted monopoly over certain services within their operating region. Again, in Europe, broadcasting is conducted by national institutions or by companies that have a franchise and are overseen by a government appointed authority while in North America broadcasters are regulated by federal agencies (the US Federal Communications Commission and the Canadian Radio-television and Telecommunications Commission). Third, computing services are provided by a large number of commercial companies which are regulated only by competition. Lastly, newspaper and often publishers, although seldom regulated formally by government, are subject to considerable scrutiny and have their range of business activities restricted by anti-trust and anti-monopoly legislation.

The convergence of these industries, with their very different traditions, orientations and modes of operation, will be very much more difficult to achieve than the convergence of the technical components of the service on which videotex is based.

This article will review the broad types of videotex service which may be provided, and the strengths and weaknesses of the organisations which could do so. It will conclude by stating outstanding issues and by identifying the actions necessary to clarify them. First, however, it will review the alternative technical infrastructures which underly the service alternatives. The essential components of a system that provides a videotex service are shown in Figure 1. The key decisions concern:

- the extent to which intelligence is centralised
- the mode of transmission.

In the early, current systems, the intelligence functions are centralised. The UK Prestel service and most other impending developments work with a user terminal that is non-intelligent; that is, one without local intelligence or storage. Current UK editing terminals are also 'dumb', although intelligent ones are being developed in the UK and elsewhere. Telecom Australia's research team wish to experiment with terminals with a high order of local intelligence; Bell Canada is already demonstrating a microprocessor and an editing terminal based on a floppy-disc;



and GEC is about to market an intelligent editing system.

A variety of transmission systems may be employed for videotex systems.

- *the telephone network*. In this case, requests are transmitted from the user's terminal to the information store where they are processed by the searching intelligence; information is selected from the store and transmitted back to the user.
  Examples are the UK PO's Prestel, the French Teletel, the Deutsche Bundespost's Bildschirmtext, the Finnish Telset, Bell Canada's Vista, the Canadian Department of Communication's Telidon, and Nippon Telephone & Telegraph's Captains.

- *broadcasting over the air*. Information is broadcast according to a fixed cycle from which users select that which they wish to receive.
  These teletext systems include BBC's Ceefax, ITV's Oracle, Télédiffusion de France's Antiope, the ARD/ZDF Videotext services, and Sveriges Radio's Text-TV.

- *One-way cable television*. The same procedure as for broadcasting (see above) but with cable providing the means of transmission).
  An example is the Reuter/IDR Monitor system.

Figure 1
Physical Components of a Videotex System

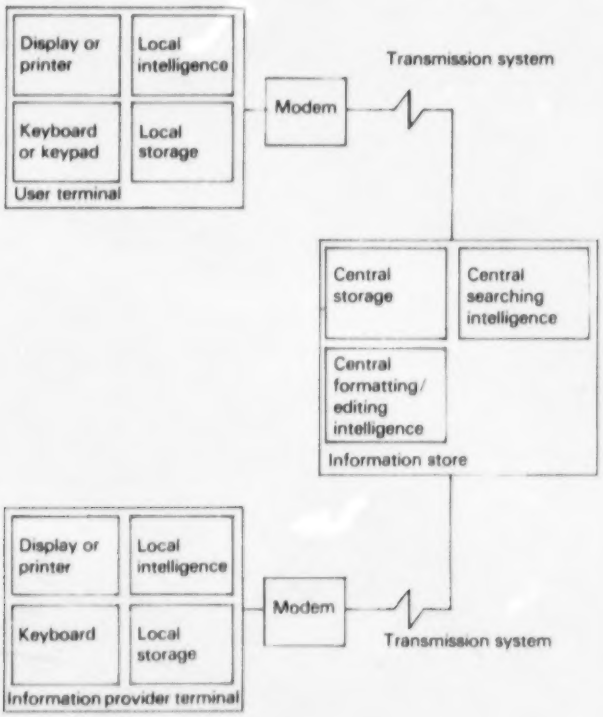
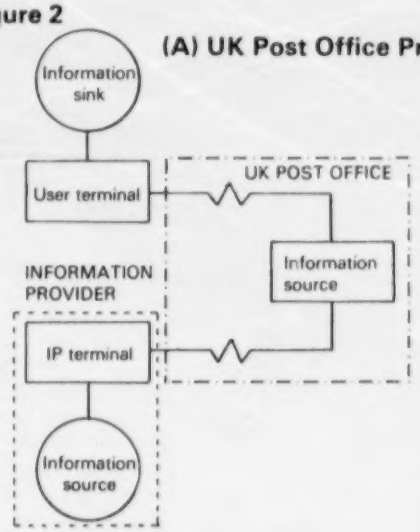


Figure 2

(A) UK Post Office Prestel



- *Two-way cable television*. Requests are transmitted from the user to the information store along the upstream channel; information is selected and broadcast along the downstream channel for 'capture' by the user or users who requested it.
  Examples are Mitre's TICCIT system, which was tested at Reston, Virginia, and Warner's Qube operating at Columbus, Ohio.

- *Hybrid systems*. For example, a telephone line could be used to transmit requests to an information store from which information was broadcast, on demand, either via cable or over the air; the advantage would be that higher quality graphics could be transmitted than via a telephone line; but the complexity would probably be unwarranted.

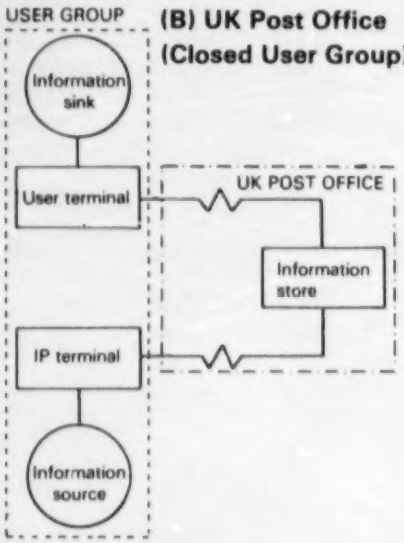
The choice between these systems depends on the three factors of network availability; on the nature of the demand; and on any advantages of management.

Network availability

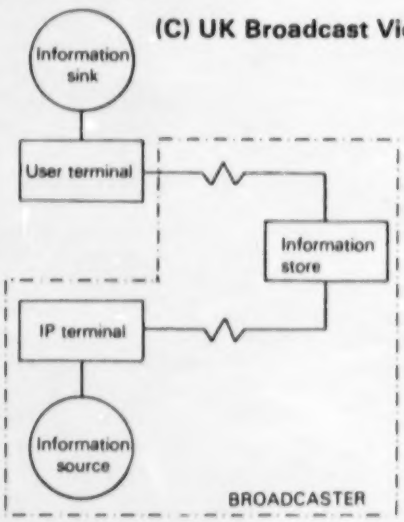
- The portion of the frequency spectrum which is assigned to the service; or the availability of redundant capacity within an existing signal (eg, the UK teletext services each use two 'spare' lines in the regular TV signal).
- the extent to which cable television networks (both one-way and two-way) are available or may be encouraged by other new services.

Demand

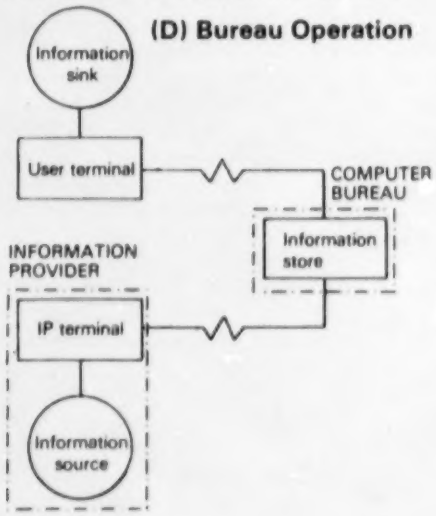
- the volume of information for which demand would exist once a stable and mature service had been developed.
- the lifetime of the information. Teletext is suitable for information which has a short lifetime and/or frequently changes whereas videotex can provide



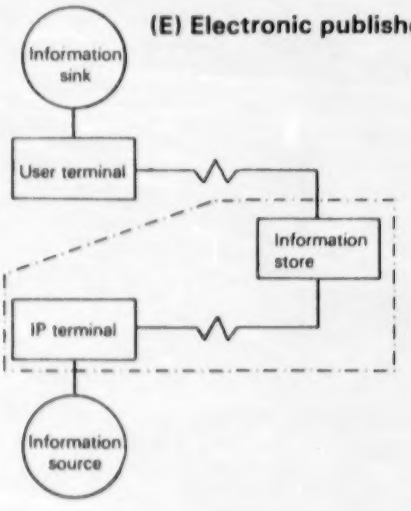
(B) UK Post Office (Closed User Group) Prestel



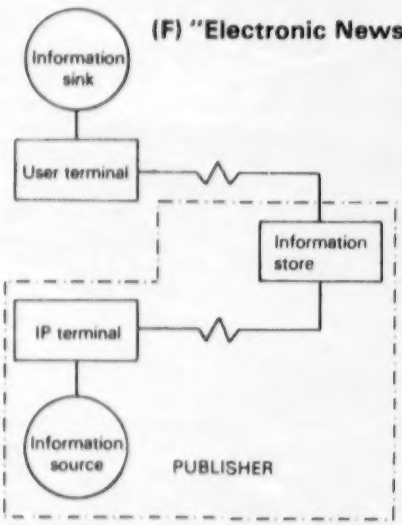
(C) UK Broadcast Videotex



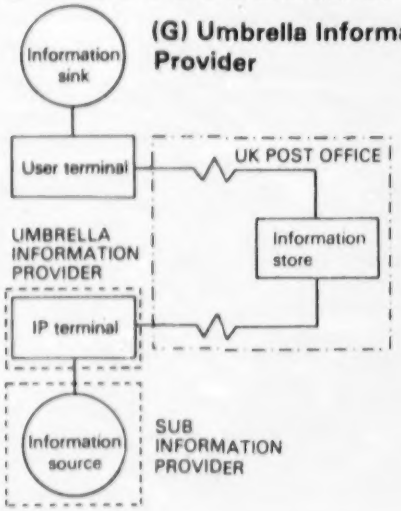
(D) Bureau Operation



(E) Electronic publisher



(F) "Electronic Newspaper"



(G) Umbrella Information Provider

access to information which has continuing value (eg, consumer reports which are now published in magazine form but which have value until the product range is modified).

- The accession of information. Teletext's limited capacity makes it suitable only for information which is regularly accessed; the extent to which a teletext service can accommodate all the frequently accessed information will depend on the 'peakiness' of the usage pattern.
- The extent to which high-quality graphics, rather than textual information, is in demand.

Management

- charging considerations, for example. Systems using the telephone network or a two-way cable system permit charging according to information-usage; broadcast and one-way cable systems permit charging only for access to the information channel itself.

The Videotex Industry

The systems of the types described above may be used to provide a service either by the organisations owning them (or some of their components) or by very different bodies. The seven options are represented graphically in Figure 2 and briefly described below. These options do not distinguish between the different modes of transmission – broadcasting, telephone network, CATV network. Instead attention is focussed on the boundaries of the activities of the organisations (broadcaster, telephone carrier, CATV company) that provide the transmission. The main questions are, which organisation operates the information store, and which organisation provides the information?

a) an organisation may provide transmission and may own and operate the information store in order to market a service based on information provided and input by other organisations known as Information Providers, or IPs (eg, Prestel's public service).

b) an organisation may provide transmission and storage for a company which supplies the information for access by a specific group such as its own employees (eg, a Prestel Closed User Group).

c) an organisation may not only provide transmission and own the information store, but also gather and input the information (eg, the UK teletext services).

d) a computer bureau may establish an information store and market a service based on data provided by other organisations.

e) a computer bureau may operate a central store, with terminals for information providers, in order to market a service based on other organisations' information (electronic publishing).

f) a newspaper or publisher of in-house material may operate an information store in order to market a service based on its own information (electronic newspapers).

g) a company may input, edit and manage information that is supplied by another organisation and marketed as part of a service provided by the carrier or by a bureau (such companies, called 'umbrella' Information Providers, are operating now in conjunction with Prestel).

In each case the service provider (eg, the carrier, the computer bureaux) would invoice the customer and itself make payments to other organisations according to the extent of the services that have been used: information, editing, and computer and communication services as necessary. In particular if local telephone calls are free, then a special charge (through a special tariff) may need to be paid to the carrier to cover its costs.

At present, videotex-type services are mainly being offered by telephone organisations and broadcasting agencies. However this dominance cannot be expected to remain unchallenged. What, then, are the relative strengths and weaknesses of the organisations which might offer a videotex service?

The Telephone Carriers

The greatest strength of the telephone carriers like AT&T in the USA, the UK Post Office, and Telecom Australia is that they are technically competent to operate or supply all the physical components shown in Figure 1. They can provide the central information store; provide transmission; and market terminals to both users and information providers. In the UK, the Post Office has decided to provide the first two components, the central information store and the transmission links.

The main difficulty faced by telephone companies in operating the central information store is in differentiating the service from electronic data processing (EDP). Some telephone companies, especially those in North America, are barred from offering EDP services. Elsewhere, a company's attempts to offer monopolistically a service which combined EDP and communication would inevitably meet strong resistance. Even in Europe, the right of a telephone carrier to provide EDP is not universal: although the UK Post Office has a Data Processing Business, the Deutsche Bundespost may not itself provide EDP, even though it has a minority shareholding in a company which does.

Because it is so difficult to define computing and communication, and to distinguish between them, it is hard to prejudge what a North American regulatory agency might decide. But forecasts can be made. In the USA, there is a double bind. AT&T cannot offer a service which has not been approved and regulated by the Federal Communications Commission (FCC) which is not allowed to regulate data processing. AT&T would have to justify to the FCC its right to such a service; and its proposals, in particular, to justify the retrieval part of a videotex service would be strongly resisted by US computer bureaux. For instance, many computer bureaux offer bibliographic retrieval services as part of their EDP services.

Bell Canada's exclusion from EDP rests on a provision that it may not "control the contents nor influence the meaning or purpose of the message emitted, transmitted

or received". The applicability of this provision to videotex is unclear.

There is a clear intention in both the USA and Canada to bar telephone companies from EDP. The cross-ownership of media has also been opposed in the past. Substantial opposition to any North American telephone company's proposal to offer videotex service is therefore likely. Nevertheless Bell Canada's recent announcement of its Vista trial indicates willingness to try to overcome the obstacles. In the USA, the provisions of the proposed new Communications Act may make it simpler for US telephone companies, especially those in the Bell System, to provide a videotex service.

A possible compromise would be for the telephone company to provide a service that would enable the user to have easier access to the information available on computers operated by commercial companies. The fitting of front-end interfaces, for example, would permit the user to be more easily guided to the information he or she desires.

In addition, the extent to which text is processed at the central information store could be reduced to a minimum. Most editing could be conducted on terminals operated by an information provider (a full IP or by an 'umbrella' IP); only the editing necessary to establish links between parts of the database need to be centralised.

The inclusion of processing and other transactions might also affect a decision as to whether videotex constituted an EDP service. As yet, it is not clear what the influence might be. It can be argued that interpreting a request and placing an order constitutes processing. Alternatively, if the request is merely switched to a computer operated by the vendor (of the goods, say) then it can be argued that this is a switching function normally provided by a carrier.

The 'grey area' between computing and communication is now exploited by so-called 'value added' carriers, which could offer a videotex service. 'Value added' carriers purchase a transmission service from a telephone company; add 'value', by providing computing or other processing services; and finally sell the combined service to end-users at a profit. (Under new US regulations it is now possible to re-sell carrier service without adding extra value, and value added carriers are now properly part of the larger group of resale carriers).

Two US value added carriers, Telenet and Tymnet, already provide access to a large number of specialised information retrieval services, and Telenet is being purchased by GTE, which is negotiating for rights to use the UK Post Office's Prestel software. In Canada, value added services are only just beginning to emerge.

In Europe, very few value added services exist. Rare exceptions are bibliographic retrieval services — and videotex. In the UK, several other organisations, notably computer bureaux, already provide information retrieval services. As a result the UK Post Office has announced that it will permit information stores to be operated and services to be marketed in competition with its own Prestel service. Prestel and its competitors will then be value-added services making use of Post Office transmission facilities.

The desirability to telephone carriers of providing only transmission will depend heavily on the charges levied for local calls. In many countries local calls are either not charged or are heavily subsidised. It will be worthwhile providing just transmission only if costs can be recouped by levying charges on the operator of the central information store, or if a separate charging system can be established specifically for videotex users. (A precedent may exist for the former approach in the application by AT&T to operate special Exchange Network Facilities for Interstate Access, ENFIA, tariffs.)

Telephone companies are strongly placed to supply and maintain terminals; especially in the potentially large market for user terminals. However, the extent to which they could try to achieve a monopoly is very unclear. The main factors are the method of displaying information and the location of the modem which connects the telephone network to the modified television receiver.

The Post Office Strategy

In the UK, the Post Office is now not supplying Prestel's terminals but simply approving the modified television receivers that are being supplied through normal retail and rental outlets. Normally the Post Office provides all modems, which are kept physically separate from the users' terminals for safety reasons. In Prestel, the Post Office had made a major departure from this policy, and made the modem an integral part of the Prestel receiver. To simplify its use, terminals will also incorporate auto-dialler facilities to automatically connect the receiver to the Prestel computer.

This Post Office strategy follows from a desire to reduce to a minimum the number of physically separate devices which a user must possess, and a recognition that any attempt by a telephone carrier to supply monopolistically a device incorporating a television receiver would be likely to meet very strong opposition.

However this strategy does have disadvantages both for Prestel's development and for the Post Office itself. Prestel's development may be delayed while television manufacturers assess the market; a large contract between the Post Office (or any other company) and manufacturers would enable eventual production economies to be achieved more quickly. The incorporation of a modem in the receiver may also delay development because of the need to isolate the modem from high voltages. From the Post Office's perspective, the incorporation of the modem and autodialling equipment in terminals supplied by other organisations may establish undesirable precedents. At present the Post Office has a virtual monopoly of modems and network addressing equipment (including autodiallers) which will be harder to maintain once the Prestel precedent is established.

An alternative strategy, which is being followed by some other telephone companies, and may be followed by the Post Office, would be that the telephone company market a unit consisting of a character generator, modem, keyboard and auto-dialler which could be plugged into a television receiver's antenna socket. This option would have the advantage of maintaining a monopoly (assuming one exists), especially of modems and network-addressing

terminals. The disadvantage may be that the result would have an inferior quality over a purpose-built terminal; but the extent of this inferiority is somewhat controversial. At the end of March, the Post Office asked manufacturers to submit tenders to supply 200,000 adaptors a year at £50 each. The development costs would be met by the Post Office. Further, the Post Office would continue to supply units for as long as no other organisation wished to do so at comparable prices.

It is unclear whether telephone companies which are forbidden from providing EDP services could market programmable terminals to users and information providers. If they cannot, then North American telephone companies may suffer disadvantages in competing with suppliers of 'hobby computers' with communication facilities.

Both the UK Post Office and the Deutsche Bundespost have stated that they will not provide information themselves, other than that concerning their own operations and services. Indeed, the involvement of any telephone company in the provision of information would be unlikely to be accepted.

Telephone companies and agencies are often the largest capital investor in a country; and often the largest employer. For such an organisation to provide information, especially news, would be likely to be regarded as a dangerous threat to free speech and to the availability of diverse sources of information. In many countries such activity would be forbidden by legislation (as it appears to be for Bell Canada); elsewhere political opposition would be extremely strong.

Broadcasters: Problems of Space

The strength of the broadcasting organisations is that they already have both information sources and technical expertise. But as long as their broadcast teletext services can use only the existing signal redundancies, their capacity remains very small. The broadcasters will also find it difficult to charge for their service. Either a special, higher, licence fee would have to be levied, or a very high rental would have to be established for a decoding unit, in order to cover the costs of providing a service. Neither of these strategies is very practical; at least while the volume of information, and the charge users might be expected to pay, remain small compared with the costs of collecting fees.

Broadcasters are unlikely to be able to develop their broadcast services extensively unless more of the frequency spectrum is set aside for teletext. They could, however, encourage the development of cable television as a medium of distribution while pressing for cable television operators to be excluded from providing information.

Even then, revenue is likely to be small, and the service is unlikely to develop unless it is regarded as a part of an overall broadcast service and funded accordingly. Commercial television companies are reluctant to introduce a teletext service because they fear that the extra viewing of teletext advertisements would in no way compensate for the lost viewing of regular advertisements. However, once a non-commercial station introduces teletext, a commercial operator would probably follow, arguing that it would be better for viewers to switch to his teletext rather than to a competitive one.

The Cable Operators

One-way cable systems appear to have considerable potential for providing videotex. The costs of the user terminal and the central computer are lower than those of a telephone based videotex service while the capacity is larger than that of a broadcast teletext service. Two-way systems would have even greater possibilities, but are expensive and seldom available.

The obstacles are that many CATV companies have limited technical expertise and service small numbers of households. In some countries, moreover, the cable companies use the facilities of telephone companies under contracts which positively exclude them from offering two-way services. Perhaps their main difficulty is financial: the problem of obtaining revenue for the additional service. In some parts of North America regulatory bodies prevent cable companies from making higher charges for additional services. Charging is also technically difficult; as with Pay-TV, charging is difficult on a usage basis and the use of company-provided decoders is sometimes restricted.

Nevertheless the potential of CATV systems for videotex seems likely to be exploited as soon as a market for the medium is established. The number of Multiple System Operators (which use microwave and satellites to interconnect several cable systems) is growing rapidly and they are gaining technical strength. It is true that the ownership of CATV systems by newspapers, telephone companies and computer bureaux has sometimes been opposed by North American regulatory bodies, and development may be restricted. However, any independent company could purchase an information service from publishers or bureaux, and be linked by existing terrestrial or satellite carriers.

Publishers

Many publishers, especially newspaper publishers, see their existing operators being threatened by videotex and so are participating in its development. Videotex is suitable for only certain kinds of otherwise paper-based printing and the capacity of a frame is relatively small. At least seventy videotex pages would be needed to replace a single page of a 'quality' newspaper. Total replacement is therefore unlikely. However, newspaper revenue could be seriously undermined by the diversion to videotex of classified advertisements and of the entertainment guides and sports results which motivate many sales.

At present, over 20 publishers out of a total of 200 companies are providing information to Prestel. As they develop and use computer techniques for paper-based type-setting, many publishers are increasingly able to provide all technical skills internally. As yet, however, none has attempted to establish its own information stores to offer a service direct to end-users (option f). One factor which may limit development is labour relations, which are uneasy, especially over the introduction of computerised technologies.

The participation of publishers as Information Providers

for broadcast teletext was rejected in the UK by the Annan Committee and by the government in its White Paper. In West Germany such participation is made difficult by legislation which requires broadcasters to provide information themselves and prevents them from acquiring it from other organisations. The resulting dispute is likely to delay the development of teletext, and may even extend to the telephone-based videotex systems.

Computer and Other Bureaux

As yet the only involvement of computer bureaux in Prestel is as 'umbrella' information providers (option g), whose existence is encouraged by Prestel tariffs. One of these umbrella companies is a larger computer bureau which might be expected, in the longer term, to expand its activities to option (e), even though there is no evidence now to suggest it.

In some countries governmental policy covering the involvement of computer bureaux in videotex may depend on the extent to which they are indigenously owned. Where bureaux are extensively foreign-owned, it may be preferred to develop informatics services through the national telecommunications agencies and companies rather than through foreign-owned companies. Nevertheless since some bureaux already provide word processing and bibliographic services, their complete exclusion would be virtually impossible.

The Manufacturers' Role

The television manufacturing industry has a considerable interest in developing videotex systems. As the market for colour television becomes saturated, the industry will be restricted to selling only replacements unless new products can be identified. For that reason the British Radio Equipment Manufacturers Association collaborated extensively with the UK Post Office, the BBC and the IBA to establish the UK teletext standard.

The main problems facing manufacturers concern the decision to institute large-scale manufacturing and the price at which terminals should be offered. Low prices can only be achieved by large-scale production, and will only be justified if demand is high. Conversely demand will only be high if prices are low. It requires a high level of confidence on the part of the manufacturer to begin the mass production without which videotex will not develop.

The major competitors of the television receiver industry are expected to be the manufacturers of 'hobby' computers. At present, few 'hobby' computers have a communications interface, but they may increasingly be expected to do so once videotex is seen to be successful. 'Hobby' computers and videotex (and video games and video cassettes) are largely being sold through the same hi-fi shops that have discovered in home video a large and exciting new range of products.

Some Outstanding Questions

Several strong industries could potentially supply videotex services, and a variety of different industry structures could emerge. Possibly the most important outstanding questions are:

- To what extent could the demand for video information be met either by expanding the capacity of broadcast videotex systems (teletext) or by providing comparable services on CATV networks?
- Can the frequencies necessary for expanding broadcast videotex be made available?
- What is the national policy towards the development of new services on CATV systems?
- What will be the role of existing and new publishers? Will they provide information on broadcast videotex or only on telephone-based videotex services? Will they operate the central information stores, or leave that function to a carrier or computer bureau? Will they try to achieve a monopoly of that operation?
- What will be the role of computer bureaux? Will they be allowed to compete effectively with services provided by government-owned telecommunication agencies?
- Will videotex be regarded as electronic data processing in North America, so that it can only be provided by value added carriers, not by telephone companies?
- Will the long-term demand for videotex services be sufficient to warrant the investment (by information providers, by receiver manufacturers and others) that is required to launch the service? Can they be persuaded that it is sufficient? If not, can broadcast videotex systems be expanded accordingly?

In the UK, where videotex development is most advanced, some of these policy questions have been answered by the Annan Committee and the White Paper while others have been made unnecessary by the pro-competition 'common carrier' stance being adopted by the Post Office. The recruitment of active information providers has been very successful, although the large scale production of receivers appears to be slow in starting.

Throughout Europe, the position of CATV is unclear and the computer bureaux are somewhat concerned about their future. Conflicts between broadcasters, newspaper publishers and government ministries threaten to seriously delay developments (in the past, the newspaper industry, which often has powerful political connections, has obstructed the development of new services). In North America, where major regulatory restructuring is underway, the situation is particularly complex.

To resolve these uncertainties, several activities are necessary. There is a need for thorough studies of information-seeking behaviour, and of associated expenditure in order to assess the long-term demand for videotex. Second, there must be systematic monitoring, within a framework derived from the above studies, of the usage of the trial videotex systems. The third imperative is for comprehensive reviews and formulation of policy in order to establish the roles of potential actors and reduce the uncertainty which discourages collaborative working. ■

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The Search for International Standards

by Michael Ford, Prestel

THERE HAS BEEN considerable comment in the technical press and elsewhere, including 'InterMedia', on the problems relating to international standards for viewdata systems. Some confusing comparisons have been made between existing and proposed services. This article will attempt to clarify the situation. Although the article is written from the viewpoint of the UK Post Office the views expressed are personal and not necessarily those of the Post Office.

The first task is to define what is meant by 'viewdata'. For present purposes a viewdata system is regarded as an interactive retrieval system which uses the telephone network or equivalent facilities to connect video terminals to a computerised store of information. The element stressed is the use of normal telephone-type circuits; the definition excludes information services provided over cable television systems, both public and private, or other broadband transmission media.

The Range of Services

The UK Post Office viewdata service, Prestel, is unique at present in providing a regular service to the public. Others are on the way. Telset, a service very similar to Prestel, is being tested in Finland, and several other systems are involved in limited technical trials similar to those undertaken by the UK Post Office in 1975.

These systems include the French videotex system (associated with Antiope, which was developed initially as a broadcast teletext system), the Canadian Telidon (developed by the Canadian government's Communications Research Centre) and Vista (a Bell Canada development which is based very much on the Prestel idea) and the Japanese Captain system which covers the more complicated requirement for Katakana characters.

In the absence of any agreed standards for viewdata systems, each organisation is developing its system to meet the specific perceived requirements of its national market, but basing its work on such international standardisations as do exist and are relevant. These standards include the International Standard Organisation character set (ISO 646) and the appropriate transmission standards recommended by the International Consultative Committee for Telegraph and Telephone (CCITT) of the International Telecommunication Union (ITU).

The British and French developments have been heavily influenced by the countries' previous work on broadcast teletext systems. Viewdata and teletext are seen as complementary services and it is clear that cooperation between them offers distinct advantages in terms of common display standards, etc, which will reduce terminal costs. A Canadian service requires a dual-language capability from the very start and the Canadians have put a greater emphasis on graphics as an aid to the problems of the duality of information pages. On the other hand, the Japanese development has been dominated by the complexity of the requirements of Katakana characters, leading to characters being generated centrally in the computer rather than in the terminal, as in most of the other systems.

There has been a further complication in that viewdata is seen by most practitioners as a mass market product which will use the domestic television set as the prime terminal. The wide variations in television standards — PAL, SECAM, NTSC, etc — and the resultant problems of compatibility have been reflected in viewdata considerations. One result is that a format suitable for the 625-line standard used widely in Europe does not easily convert to the 525-line standard as used throughout North America. None of these problems are insoluble but they all add to the complexity of the standardisation debate.

A further order of complexity is introduced by the number of different international consultative and policy-forming organisations that have registered an interest in the subject. Because of viewdata's relationship with broadcast teletext, one of the first organisations in the field was the ITU's International Consultative Committee for Radio (CCIR), closely followed by the European Broadcasting Union (EBU). When the use of the overall telecommunications network became involved, the other ITU committee, the CCITT, joined the act.

At about the same time, the Conference of European Post and Telecommunications Administrations (CEPT) commenced its own studies, and the European Computing Services Association (ECMA) expressed interest. With all this European activity, it was not surprising to find the Commission of the European Economic Community has sought to evaluate the impact of this new technology and has commissioned at least six studies. Obviously the ISO also has a direct interest.

Moreover, this wide range of international bodies is reflected in each country by a similar range of interested *national* bodies. In the United Kingdom, for instance, the list includes the Post Office, BBC, IBA, British Radio Equipment Manufacturers' Association, British Standards Institute, the Computing Services Association, the Telecommunication Engineering and Manufacturing Association and the Central Office of Information. It is easy to see why there appears to be some confusion and why progress can be rather slow.

It is as well to ask whether standardisation is necessary and, with all the disparate interests involved, if it will ever be achieved. Clearly *some* standardisation is desirable,

particularly if one believes that viewdata is a new communications medium of immense potential; but the work needs to be concentrated on the essential factors.

What are the benefits of standardisation? There would appear to be three main areas:

- to facilitate the interconnection of national viewdata systems in much the same way as national telephone and telex systems are interconnected internationally.

- to permit terminals in one country to be used to access directly systems in other countries, whether or not a viewdata system is operational in the terminal country.

- to widen the potential market-base for viewdata equipment so that economies of scale in production can reduce the costs of the service to the end user.

An examination of these requirements shows that the main scope for *viewdata* standardisation lies in the terminal. The main reason is that the provision of interfaces between differing standards in computers or transmission is neither difficult nor significantly expensive. On the other hand, the main requirement for the standardisation of *broadcast teletext* systems lies in the transmission technique as well as in the terminal.

Where is the debate going? The first thing to state is that there is far more agreement than disagreement. The publicity that tends to be given to the latter too often overlooks the major progress that has been achieved between the major countries involved. Given goodwill, there is no inherent reason why an acceptable compromise between the various national positions cannot be reached so that this important new medium can develop in an orderly fashion. Standardisation on basic principles does not mean the eradication of competition and creative development. Indeed, a sound international basis for the expansion of viewdata systems should lead to an increase of such activity.

Technical Standards

There are four main areas of debate and discussion at present in the technological field:

(a) the character set to be used for latin-based alphabets
(b) the code extension techniques
(c) the display format on the terminal screen
(d) the techniques for the provision of graphics.

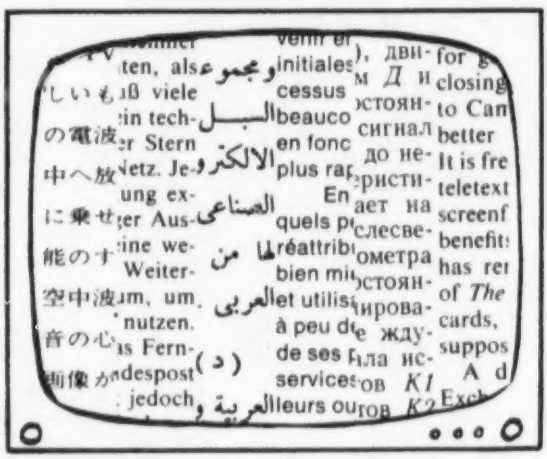
Character Sets. The simplest character set uses latin characters without any accents or special combinations (eg, English). The provision of accents or other special symbols is the main problem to be solved before an agreement on character sets can be reached. There is an agreed standard, ISO 646, but like many international standards it results from a compromise of various positions and allows variants. An International Reference Version (IRV) was originally assumed to be the starting point but there is also a provision for variations oriented to different countries or applications.

One of the main disadvantages of the IRV is that it does not provide for $ or £ signs but has a special International Monetary Unit symbol. The first basic disagreement on character sets is between the British and the French. The British systems (both Prestel and the broadcast teletext systems, Ceefax and Oracle) use an application-oriented version of the standard, which includes certain fractions and other symbols as well as the $ and £ signs, whereas the French set is based on the IRV. There are various ways of reconciling this difference and there are a number of proposals 'on the table' for discussion in CCITT and CEPT. It is hoped that a satisfactory compromise is not far distant.

Code Extension Techniques. The resolution of the problem of character sets depends to some extent on the method of providing either for accents or for a shift to another character set, known as a code extension technique. Space does not permit more than a very simplified description of the problem, which also concerns the debate on broadcast teletext standardisation. There are three major contenders.

The method proposed by the French is known as the Composition Code Method whereby an accented character is created first by the transmission of the character without an accent and then by the addition of an accent added after a backspace. This technique has some disadvantages when used for computer storage since a character is represented by a string rather than a unique code. It is also unsuitable for use in synchronous broadcast teletext systems such as those used by British broadcasters. It does have advantages, however, in its compatibility with carriage printers, and it does allow a greater range of characters.

The British systems are based on a Direct Coding Method. The basic Character Set (GO) contains the majority of required symbols and, if special characters are required, an escape technique is used to move to another character set (G2). Various different character sets, to cope with different languages (eg, Russian) can be readily incorporated. This method is more flexible than the code extension method but it does impose a blank space on the display when shifting from one set to another.



The third technique is a compromise of the above two and provides for a GO set containing all the required alphabetic characters, accented as well as non-accented, with figures and symbols in a G1 set which is accessed using the shift technique. This technique does have some disadvantages but is the most likely contender for general acceptance at the moment. However, more and better proposals may emerge.

The Display Format. The main differences in display formats tend to be between the European systems, which developed from a 625-line television standard, and the North American systems, which are more attuned to the 525-line standard. In Europe, the French utilise 25 lines of 40 characters per line whereas the British and Finnish systems use 24 lines, although also of 40 characters. All systems use a combination of 7 different colours.

The North American systems use the same colour choice but seem to be going for 20 lines of 32 characters. The Japanese, with a quite different problem, will either have 8 lines of 15 characters or 16 lines of 30 characters. The main interworking problem to be resolved will be between the North American and European approaches where some form of interface will be required to allow the European page to be presented on a North American terminal.

Graphics. There is still a great deal of work to do on the development of appropriate graphics and it is difficult to foresee what will be the outcome. The main requirement is to achieve an appropriate trade-off between the quality of the graphics and the costs of providing the necessary generating capability in the terminal.

The European and Bell Canada systems tend to approach graphics by sub-dividing each character space into a number of smaller rectangles. The Telidon approach is to use a fairly complex contour code system which provides better picture definition, curves, etc, than the former systems, but whose higher terminal costs are a significant penalty.

The Mix of Contents

All these aspects relate to technical standards. There is also work going on within the various international organisations to seek standardisation or mutual agreement on the services and facilities to be provided. The need for standardisation here is less urgent. Few practitioners are prepared to forecast just how the mix of information retrieval, interactive computing and messages will develop. It is quite probable that the national solutions adopted will vary even more than they do in the technical field, depending on the status and type of overall business in which the purveyor of each system normally operates.

In some countries, there will be real regulatory problems facing a non-carrier organisation who wishes to offer a public message facility. In others, there are similar problems in relation to a carrier organisation providing an information retrieval service. While there will be inconveniences in attempting to interwork between national systems that offer different facilities or have different regulatory environments, there is no inherent technical difficulty in providing for an appropriate interface to take account of such differences.

This article has attempted to set out a very simplified view of the standards issues currently being addressed by international organisations. It will be seen that the most urgent for resolution, if the benefits of standardisation are to be achieved, are the technical issues that relate to terminal standards. In resolving those issues, it is considered of vital importance that a flexible approach should be adopted in order to allow the orderly evolution of this new medium without penalising either the early starters or the late starters. The operational issues, while important, are far less urgent and time is very much on the side of those involved in the discussions.

To give a personal view, I am hopeful that some form of interim standard relating to the viewdata terminal can be adopted by CCITT before the end of next year. I think it will take another CCITT plenary session, 3-4 years' time, before a final standard can be achieved. However, both standards should provide for downwards compatibility with the existing activity. On the operational issue I do not envisage more than the development of draft standards by the end of next year, which will then be adjusted and modified with experience over the next 5 to 6 years.

It is important to base decisions on the experience of the past — and that experience shows a real need for flexibility, goodwill and compromise on the part of national organisations to achieve standardisation where it is essential. It is important not to dissipate efforts on attempts to standardise where it is not really necessary. It is also important to keep in mind the broad level of agreement that exists when considering the relatively small number of issues upon which there is disagreement.

Viewdata systems provide a new and exciting form of electronic publishing which can make a real impact on the future pattern of communication throughout the world. It is important that short-term national advantage should not be used to disrupt or hinder the process of bringing the power and benefits of viewdata systems directly into homes and offices throughout the world. ■

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Will Consumerism Inhibit the New Media?

by Anthony Smith

THE NEW information industries of the 1980s and 1990s will have to deal with the traditional issues of freedom of expression and social control in new forms and under the impact of new trade-offs and paradoxes. A series of new common carrier devices will enhance individual choice and make possible many new voices and sources; but, at the same time, the movements towards consumer protection will restrict further the freedoms of the communicator.

The right of freedom of expression — like other human rights — is always in conflict with a number of other contiguous rights. The new technologies are bringing these rights into more direct confrontation than in the past.

While one group of well-intentioned and radical minds, feeling themselves to be rather liberal, are trying to create an information of abundance by encouraging de-regulation, another group of well-intentioned and liberal minds, feeling themselves to be rather radical, are arguing for a new set of controls. The shift is most visible in the USA where the House Sub-Committee, chaired by Lionel Van Deerlin, has proposed a re-write of the important 1934 Communications Act. The new act would abolish virtually all public regulation of radio at the same time as an ever growing number of private and semi-public groups are pressing for controls over advertising, children's television, violence, the validation of information, and other matters.

All around the world in 1979 one can see the building of the foundations of a series of new media, housed in new institutions or in extensions of old institutions; and at every building site compromises are being made. In most cases, each negotiation takes place in isolation. Yet historic issues are at stake.

The novel institutions and expanded technical bases of the new media make it easy for fundamental rights to be snatched away on technical grounds (which may be secondary, and temporary), or in the name of some social right or principle which may be wrongly understood or simply false. It is extremely important to examine with care what is actually happening at each construction site of the new systems.

One contentious issue is the notion of a common carrier. These services are not always as 'common', as open, as their operators would have us believe, and as they often appear.

In England the principle of a common carrier is enshrined in Pickfords, the general carriage service which grew up with the railways and became a national institution (it was indeed nationalised after the war, before retreating into the lumber room of declining services). Pickfords used to come and collect one's trunk before a long train journey and deliver it to the hotel, college, or friends — or old granny — of one's destination. Today such an active, comprehensive, service would be hopelessly expensive. Pickfords has become one among many companies which move whole house-fulls of furniture; they cannot cope with smaller, more individual, goods. Pickfords and the large brass-bound trunk has given way to private cars and the plastic holdall. We travel by different means, using containers more appropriate to the new forms of transport, and require a smaller or at least different range of clothing and personal effects.

What has in effect happened is that a common carriage service which was based upon a particular kind of *container*, for miscellaneous goods, has met up with a series of historic constraints, which have brought about a general reorganisation not only of the system of carriage, but also, most importantly, of the containers and the *contents*. A complex set of interactions has taken place between social customs, public services and transportation systems.

Not Neutral

The common carrier concerned was a vital element in a complex reticulation of tastes and customs; it was not 'neutral' in its impact. Pickfords did not mind what was put in your trunk (so long as it was not an animal or an explosive device). Its conscious perspective on the world was that of a provider of a totally neutral service. Yet its effect was to determine social custom.

In legal terms, it is possible to describe a common carrier as an instrument which exercises no influence over the material carried and accepts all appropriate trade on offer. In social terms, however, a common carrier exerts profound influences over all of the material it touches, whether physical, material or intellectual. All common carriers generate a vast industry of subsidiary activities. They exercise a displacement effect, altering the flows of discourse and transportation, changing upwards or downwards the level of usefulness of other existing systems. In the 19th century the trains created the possibility of mass transport and transformed a relatively non-mobile society into a mobile one which constantly demanded new modes of mobility.

Society imposes various controls on each form of transportation. The state supervised the construction of the rail system, imposed law upon the companies, and gradually worked out methods for inspecting the system in the interests of the customer's safety and comfort. The telegraph developed along parallel lines (literally), at first as an information adjunct to the railway. At each stage the relevant common carrier was established, as the US 1934 Communications Act put it, in the "public interest, convenience and necessity". At each stage of their development

these common carriers brought private industries into existence to service them, to provide the 'content' to profit from the service. The essence of a common carrier is that it supports private and normally profitable activity, and remains in service until those activities have become outmoded, or replaced.

Consumers and Producers

There has thus always been some kind of balance, maintained by the state, between consumer rights and producer rights; between the protection of consumers and the pure freedoms of common carriage rights. But the transmission systems coming into existence in this generation are doing so at a time when the protection of the consumer has become much more firmly institutionalised in the economic and trading sphere than ever before. We face the danger that the consumer, when exercising this power in the information sphere, may seize sovereignty from the supplier of information. In other words, the new common carrier services of information could turn out to be used as constrictors of traditional freedoms.

Videotex is really the first of the new services in which the battle is being fought out internationally between the two contrary tendencies with their corresponding sets of values; the one harking back to an idea of pure publishing freedom, the other belonging to the age of consumerism, protection, 'caveat vendor'. The UK Post Office has attempted to launch Prestel in Britain in the ancient tradition of Pickfords, as if it were a form of paper publishing. Anyone with information to sell may, on fulfilling certain minimal conditions, set up in business as an Information Provider. Prestel is based on the principle of the provision of information to all those who wish to buy; it is halfway between a private message system and a broadcasting system, between the letter or telegram and the newspaper or film.

Inevitably, in the constructing of a new system, each government or authority turns to the existing large-scale suppliers of information for the initial content. The Post Office turned to Reuters before formulating its present policy of acting as pure carrier for all providers who come forward. Other societies are offering the medium to their own attested information suppliers. In some cases, the argument is the very old one that the present capacity is limited and that established suppliers must be offered first chance before additional elements are allowed to participate.

The French, for instance, in starting to build the data base for Antiope, have turned to established information fiefdoms to supply the content. The national wire service, the trades unions, the motoring organisations, the meteorological authority and the stock exchange are among those invited to join the select band of the first providers of information. Antiope may come to preside over a kind of feudal system, in which the right to provide stated categories of information is distributed to named and exclusive organisations; baronies around a feudal court.

It is a logical way to proceed in a society which regulates its telecommunications as a national monopoly from which each fresh service is permitted a special 'derogation'. All intrusions upon the state monopoly of signalling is perceived, in legislative terms, as a kind of special act of delegation. It is a specific right which is granted, not a general social right which may be limited.

The Japanese are also adopting the 'neo-feudal' model. A new editorial authority is planned to be set up in the early 1980s to take command of the Captain system's standards of content and absorb the self-regulated experimental system which the providers have set up in the interim.

West Germany is proceeding in yet another manner. It is inviting each information provider to store its own material in its own computer and then to feed it into the Bundespost's videotex network. In one sense the Bundespost is graciously allowing everyone the right to communicate via videotex; but in another sense it is restricting information provision to those who are equipped to cope with it.

A New Feudalism

One can even discern in Britain a large measure of corporatism creeping into what could have been (and might, in the long run, grow into) an open system, offering information interactively and free from regulation. The structure of an open approach is still intact but important compromises have already been made. For one thing, there are already two tiers of providers. The major IPs in the top tier have three digit code numbers, which are easy for the user to connect with; they pay a very large sum to the Post Office for the privilege. These 'umbrella' organisations, rather like small 18th century estates, freeholders with a stake in the country and something to lose if things go wrong, are likely (it is argued) to take a responsible view of their task and act, through their commercial links, as censors and guarantors of the information provided through their enterprise by the smaller providers in the lower tier.

It is important, of course, that the user gets a good impression of the data base; that all information offered in the index is actually in the data base; that all information is as up-to-date as it is supposed to be; and that advertisers' announcements are clearly labelled. In the early months, as manufacturers are painfully coaxed into risking investment and as the Prestel directorate nervously wonders how fast to build its storage capacity, the arguments mount for the Post Office to take refuge in autocracy. And these patterns and ownerships of information, once bequeathed, will continue. The information privileges distributed to the pioneer providers would be difficult to change. They are almost as formal as a TV or radio franchise.

The system is plainly oligopolistic; and the providers of information have already set up appropriate defense. They have set up their own code of conduct. After all, nobody can be against codes of conduct freely entered into. Nobody can criticise a code against unfair trading, consumer exploitation, or low standards of advertising practice. But every one of these excellent principles eats into the freedoms upon which Prestel was to have been constructed.

A new information feudalism is creeping into being. The large suppliers are taking over the data base and organising

it to their convenience before the medium is fully established — creating, as it were, the basic culture of the medium — while consumer protection agencies are trying to acquire a formal authority over the medium before its originality and real personality are explored.

In some fields, however, the tendency towards freedom of expression appears to be making advances. There is intense pressure in several countries from independent makers of film and television programmes to secure some right of access to national television networks. In the USA independent companies have long provided the bulk of material in the prime-time schedules; but it is almost entirely entertainment material that is bought. A group of documentary film makers is now suing the three networks for refusal to show their documentary work. They have not been successful; but it seems likely that token gestures may be made, in the name of the First Amendment and the Sherman (anti-trust) Act, to permit occasional documentaries, made outside the networks's news departments, to be shown.

One very interesting example of this movement is the proposed Open Broadcasting Authority for Britain's fourth channel, which has arisen from similar pressures. Whatever the arguments for and against the OBA it is evident that no plan for this channel can now omit some provision for the work of independent film-makers. Yet here again the conflict is at work. Among the more powerful arguments which have been urged against the proposed 'opening' of the channel to non-employed programme-makers has been the proposition that audiences need to be protected against unbalanced and unfair material. Who will hold the balance in controversy? Who will impose the rules of equal time, keep unwarranted violence from the eyes of the young, maintain the rules of decorum and sexual propriety? Who will decide what is good language and what is bad language?

In the first era of electronic media, regulation was justified on the grounds that the spectrum, and transmission capacity, is a scarce but nationally owned resource. The vast power of national broadcastig agencies was predicated upon these slender hypotheses. In the field of information, broadcasting regulation has been the supreme example of consumer protection. The pattern has spread in many countries to the press, where non-statutory organisations such as the UK Press Council or, as in Japan, self-regulation by the newspaper publishers themselves, has helped to improve the quality of the material that reaches the consumer. It is most instructive to see where each society draws its dividing lines and how, in many cases, the power of consumer protection overrides the new medium's actual technical potential to be more open.

The Comfortable Logic of Scarcity

The arguments employed today (cogently) against the removal of restrictions in an age where scarcity is abating are arguments which tend to inhibit our freedom of discussion, of presentation and of exhibition. Times have changed. Prevailing ideas have shifted significantly away from 19th century ideals of press freedom, even though technical opportunities have arisen to enhance those very ideals. Of course, the American experience with cable does provide evidence of a contrary kind, but only in a very small number of markets. Most cable, in all parts of the world, is transmitting material supplied by the existing national entrepreneurs of the TV and film industries and the press. Each new system of transmission is filled by established suppliers. Each new system in this century has arrived with the promise of a new 'abundance' and has quickly been enfolded in the comfortable logic of scarcity.

It is worrying, even somewhat alarming, that the newest techniques of transmission (switched data networks, two-way vision via optic fibre, satellite-born broadband connections) seem to be falling victim to a new wave of regulatory pressures. The very idea that these services may find their way direct to the home dramatises their potential intrusiveness, and increases the case for care and control. The Qube cable experiment, run by Warner at Columbus, Ohio, permits pornography to be pumped into individual homes, at the subscriber's request, and on payment, and one can very easily see the pressures which will mount in favour of the regulation of its content if such services move beyond the experimental stage.

This expectation that information which reaches the home via cable or fibre may be subject to the traditional controls is the more worrying when one realises the nature of the displacement effects of the new common carriers upon the old information systems. The danger is that as we reach the age of information abundance we shall be subject to a paternalism which spreads over those areas of content which have for decades been gradually freeing themselves from state or other forms of interference.

The newspaper has arguably reached the limits of its growth as a form, in that the costs of its raw material are beginning to outweigh (literally) the advantages of distribution and delivery to so wide an audience. It is far better to transfer information of this kind to magazines, if it can wait a week or two, or to videotex/teletext, if it is urgent and perishable. A glance at the existing list of the 160 first generation Information Providers to Prestel indicates the extent of the inroads which this medium could make into the existing world of specialised informers. Many of them have hitherto been able to reach the public through the mediation of the printed press. Now they can deal directly with their customers, rather than through reporters, editors and advertising sales staff.

The new information media, which promise so much abundance, look set to be substantially restricted by quite new forces. We may simply be exchanging one set of regulations for another; replacing public paternalism for private consumerism.

"If the freedom of the press perishes," said a distinguished British jurist, "it will not be by sudden death. There will be no great battle in which leader writers can win imperishable glory. It will be a long time dying from a debilitating disease caused by a series of erosive measures each one of which, if examined singly, would have a good deal to be said for it." It is already a decade since he said that. ■

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Reviews

Media in Japan

It is easier to discover the facts about Japanese communications than about most other national systems. The Japanese have always had a good reputation for their presentation of information on TV and radio, telecommunications, technical developments, and so on. The latest book, **The Present State of Communications in Japan**, is an English version of the White Paper on Communications that was published in Japan last year. Its production was supervised by the Ministry of Posts and Telecommunications and carried out by the publishers of 'Look Japan' (copies are available from 'Look Japan', 2-2-chome, Kanda Ogawa-machi, Chiyoda-ku, Tokyo). The 56pp report is notable for its 'macro' approach to the social and economic aspects of communications, and for the quantity of hard data. It provides an excellent overall picture of a nation's communications.

'Look Japan' has also produced a special issue of its magazine, taking up the entire 10 February edition, on "Japan's Posts and Telecommunications", including broadcasting. It consists mostly of interviews with and articles by the top administrators in government and private business.

An excellent book on Japanese (and Western) approaches to broadcasting is contained in the papers and discussions of a recent Hoso Bunka Foundation symposium, now published as **Symposium on the Cultural Role of Broadcasting** (Hoso Bunka Foundation, Kyodo Building, 41-1 Ugawa-cho, Shibuya-ku, Tokyo 150; 1979; 143pp; price on application). The topics include broadcasting and human development, broadcasting and social development, the future of broadcasting and future problems.

TCDC

A number of publications on Technical Cooperation Among Developing Countries have been produced by the United Nations as a result of the TCDC conference held last August/September in Buenos Aires. The two-week conference was concerned with South-South cooperation on technical, scientific and planning matters (see 'InterMedia', December 1977 for a full account). It was attended by delegations of 138 states, which included 45 cabinet ministers and 21 ministers of planning. The conference's main recommendations are known as the **Buenos Aires Plan of Action** (A/CONF.79/5). Other central publications are **The Report of the UN Conference on TCDC** (A/Conf.79/B/Rev.1) and **TCDC as a New Dimension of International Cooperation for Development** (A/Conf.79/6). The UN Development Programme has also launched a new magazine, **TCDC News** (UNDP, Room 1906, UN Plaza, New York, NY 10017, USA) which is available in Arabic, English, French and Spanish.

Books

As It Happened: About CBS and Me (Doubleday, New York; 418pp; 1979; ISBN 0 385 14639 6; $14.95) by William S. Paley. The autobiography of the head of CBS. Informative and entertaining.

Bibliography of Austrian Mass Communication Literature 1945-75 (Wolfgang Neugebauer, Postfach 64, A 5053 Salzburg, Austria; 349pp; 1978; ISBN 3 85376 022 8; DM 28.00) by Benno Signitzer. The first systematic compilation of Austrian publications in the field of communication. It contains 4,600 entries (German and English) and covers themes on specific media (the press, broadcasting and film) as well as communication research, news agencies, advertising, journalism, communications policy and law, etc. Invaluable for those working in comparative media systems.

Broadcasting and Youth (Calouste Gulbenkian Foundation, 98 Portland Place, London W1, UK; 138pp; 1979; ISBN 0 903319 14 4; £1.70). This study was commissioned by the Calouste Gulbenkian Foundation and the Manpower Service Commission in association with the IBA and BBC. It looks at what broadcasting is doing and what it might do in future to meet the needs of young adults – which the study group feel are quite distinct from the rest of the adult population. It was felt generally that broadcasters need to work more closely with other agencies and provide more popular programming for this group, as well as systematic follow-up activities.

Communications for Tomorrow (Praeger, New York; 512pp; ISBN 0 03 046546 X; $30.00 [hardback]; ISBN 0 03 046541 9, $8.95 [paperback] edited by Glen O. Robinson. An informed and interesting collection of papers on major communication issues emanating from a meeting of a new Task Force on Communications Policymaking at the Aspen Institute. Topics include economic, social and technical trends in communication services; industry structures and regulatory boundaries; social service applications of the 'new media'; and the role of government.

Comunicacion Social y Desarrollo, Volumes 1 and 2 (Centro International de Estudios Superiores de Comunicacion para America Latina, Centro de Documentacion Apartado 584, Quito, Ecuador; 494 and 702 pp; 1977; price on application). Although the amount of Latin American research on social communications has been steadily increasing, there has been little attention given to publicising the results and applying the findings. CIESPAL in Quito has therefore undertaken to collect, process and disseminate information on mass communication research in Latin America, Spain and Portugal. During 1974-5, it collected some 5,000 documents from 18 countries, and in cooperation with CIID in Bogota and the Friedrich Ebert Stiftung processed their contents. These books contain a summary of the purpose, development and conclusion of 700 studies. There are five indexes; according to title, author, themes (description), chronology and geography.

Information Transfer, Volume 1 (International Organisation for Standardisation, Case postale 56, 1211 Geneva 20, Switzerland; 516pp; 1977; ISBN 92 67 10017 3; price on application). A useful handbook compiled by the ISO and sponsored by UNESCO as a back-up for its UNISIST Manual for Information Handling Procedures. It is intended as an introduction to international standardisation in the field of information transfer.

The International Commission for the Study of Communication Problems (UNESCO, 7 Place de Fontenoy, 75700 Paris, France) has published some more reports and surveys; all are free. **No. 22: Communication: Extracts from International Instruments. Nos 23 and 24: Survey of National Legislation**: the constitutional and legal provisions affecting media enterprises. **Nos 37 and 38: The Right to Communicate**; the first contains two articles on the concept and definition of the right to communicate by Stan Harms and Desmond Fisher, respectively, while, in the second, A.A. Cocca and Jim Richstad look at the right's legal foundations and its relationship to the mass media.

Jugendmedienschutz – ohne Zensur in der pluralistischen Gesellschaft (Nomos Verlagsgesellschaft mbH & Co KG. 7570 Baden-Baden, Waldseestrasse 3-5, Postfach 610, Germany, FR; 170pp; 1978; ISBN 3 7890 0433 2; DM 6.80) by Rudolf Stefen and Jorg Weigand. The papers of the 1977 annual conference of the 'federal examining office for publications harmful to young people'. Topics include the "Protection of Youth Against the Media" and "Without Censorship in a Pluralistic Society".

Kabelfernsehen und Bildschirmzeitung (Bundesverband Deutscher Zeitungsverleger e.V., Riemenschneiderstrasse 10, 5300 Bonn 2, Germany, FR; 114pp; 1978; free) edited by the Federation of German Newspaper Publishers. A collection of newspaper clippings and reports giving an overview of the attitude of the German press to cable TV, videotext and teletext.

National Sovereignty and International Communication (Ablex Publishing Corporation, 355 Chestnut Street, Norwood, New Jersey 07648, USA; 286pp; 1979; ISBN 089391 008 2; price on application) edited by Kaarle Nordenstreng and Herbert I. Schiller. A collection of essays in which various experts examine the traffic rules of international communication from the perspective of the social sciences, law, journalism, international politics and technology. The book is divided into four sections: Communication and National Development;

Changing Perspectives; Direct Satellite Broadcasting: Examplar of the Challenge to National Sovereignty; International Law: Codification of Fundamental Principles; and International Communication in Transition: The New Global Balance.

The Newspaper (Thames and Hudson, London; 192pp; 1979; ISBN 0 500 01204 0; £6.00) by Anthony Smith. An illustrated international history of the newspaper from its origins in the 17th century to modern times. Mr Smith has just finished a major international survey on the future of the newspaper (whose results will be published by OUP in New York) and is known to 'InterMedia' readers as the author of the long article in the August 1978 issue, "The Future of the Newspaper: The Waning of the Fourth Estate".

Outer Space – Battlefield of The Future? (Stockholm International Peace Research Institute, Sveavagen 166, S-113 46 Stockholm, Sweden, and Taylor and Francis, 10-14 Macklin Street, London W1, UK; 202pp; 1978; ISBN 0 85066 130 7; £8.00) by Bhupendra M. Jasani, a research fellow at SIPRI. In recent years over 60% of the satellites launched by the USA and USSR have been military satellites. This analysis provides a thoroughly researched and documented account, with numerous tables of all USA, USSR, European, NATO and Chinese military spacecraft. The author also briefly suggests that the militarisation of outer space is generating new doctrines of strategic, limited, nuclear warfare.

Problems in International Communications (Aspen Institute Program on Communications and Society, 2010 Massachusetts Avenue N.W., Washington, DC. 20036; USA; 56pp. 1979; free). A report of an Aspen conference held in August 1978. The title may mislead; all the chairmen and main speakers were US; and the contents reflect US views on US policy. But the quality of the speakers, and the intelligence of the discussion (between US and non-US participants) make this report one of the best available summaries of US thinking and policy on communications issues.

Research Sources – Australian Television (Media Arts and Education Department, Melbourne State College, 757 Swanston Street, Carlton, Victoria 3053, Australia; approx 50pp; 1978; ISBN 0 9597036 7 5; free) by Brian Sheedy. A guide to the primary sources of research material on Australian television. The sources are arranged into two groups; those derived from the actual programmes and those obtained from surveys, reports, etc, about television.

Rural Radio: Programme Formats (UNESCO, 7 Place de Fontenoy, 75700 Paris, France; 94pp; 1979; ISBN 92 3 101616 4; price on application). Another monograph in the series 'Communications Technology and Utilisation' which surveys how seven rural programmes were carried out in Nepal, Papua New Guinea, Ghana, Colombia, Philippines, Czechoslovakia and Canada. It focusses on various methods of reaching the rural audience and provides practical tips and creative suggestions for broadcasters in this field of communications.

School Radio in Europe (K. G. Saur Verlag KG, Possenbacherstr 2b, POB 711009, D-8000 Munchen 71, FR Germany; 198pp; 1979; ISBN 3 598 20200 8; DM 28.00) edited by Internationales Zentralinstitut fur das Jugend-und Bildungsfernsehen. In 1977 the IZI held a conference on radio in schools. The first half of this book deals with the reports obtained from the questionnaire which they sent to 30 broadcasting organisations in 23 European countries. Each country is listed alphabetically and contains notes on the production and organisation of radio in schools. The latter part of the book contains a selection of the essays presented at the conference.

The Spanish Media since Franco (Writers and Scholars Educational Trust, 21 Russell Street, London WC2, UK; 37pp; 1979; ISBN 0 904286 08 8; £3.00) by William Chislett. A critical review of the Spanish press under the regime of Franco, and developments since his death. Also included are extracts from various Press laws.

Special Report on Broadcasting in Canada 1968-78 (Canadian Radio-television and Telecommunication Commission, Ottawa, Ontario K1A ON2, Canada; 120pp; 1979; price on application). A statistical analysis of broadcasting, based on data from the Bureau of Measurement. The text includes a brief history of broadcasting in Canada up to 1967 but mostly examines broadcasting between 1968-78 in terms of the growth of TV, radio, cable TV, and the ownership of broadcast media.

The Third World and Press Freedom (Praeger, New York; 253pp; 1978; ISBN 0 03 04551 0; $20.00) edited by Philip C. Horton. The edited papers of a conference held at the Ed Murrow Center of the Fletcher School of Law and Diplomacy, Tufts University, USA (and later followed by other meetings in Cairo and Washington). The papers provide a useful series of comments from journalists in the USA and Third World (Nigeria, Argentina, Yugoslavia, India), UNESCO experts and academics. Good bibliography.

Who's Who in Commonwealth Broadcasting (The Secretariat, Commonwealth Broadcasting Association, Broadcasting House, London W1, UK; 14pp; 1979; free). A list of the senior staff of member organisations of the CBA. Addresses, telex and telephone numbers are given of the member organisations.

The Wired Society (Prentice Hall, Englewood Cliffs, New Jersey; 300pp; 1978; ISBN 0 13 961441 9; $12.95) by James Martin. The author, an ex-IBM manager, is a prolific writer and speaker on contemporary communications. This book – his main one – is thoroughly imbued with the virtues of America high-technology, but is notable as one of the very few attempts to talk about the 'communications revolution' in terms that laymen can understand.

World Film and TV Study Resources (Friedrich Ebert Stiftung, Godesberger Allee 149, 5300 Bonn 2, Germany, FR; about 200 pages; 1978; price on application) by Ernest D. Rose. A second version of the contents of Dr. Rose's reference guide to worldwide training centres and archives. The original 1974 package consisted of a binder and contents; this 1978 update consists of a complete new set of contents. Useful reference material.

Periodicals

ASBU Review (Arab States Broadcasting Union, 22a Taha Hussein Street, Zamalek, Cairo, Egypt; quarterly; free). The **October 1978** issue contains a useful, factual, 17pp survey of Pakistan broadcasting.

Media Culture and Society (Academic Press Limited, 24-28 Oval Road, London NW1; quarterly; ISSN 0163 4437; £15.00, UK; £19.00, overseas). A new journal which hopes to provide a forum for research and discussion about the mass media. Each issue will contain a number of articles on a selected theme. **Volume 1 Number 1** is concerned with the media and politics and contains articles on TV and the 1978 French general election; press freedom; and the EEC and management of news.

Telecommunication Journal (International Telecommunication Union, Place des Nations, CH 1211 Geneva 20, Switzerland; ten issues a year; 75.00 Sw. Fr). The **February** issue has a special survey of 'Telecommunications in India', which includes a message from the Indian Minister of Communications, B L Varma and seven articles on the development of communications: telecommunication operations, rural telecommunication, the manufacture of telecommunication equipment, technology developmet, external telecommunications and spectrum management and radio regulatory functions.

World Environment Report (Center for International Environment Information, 300 East 42 Street, New York, NY 10017, USA; every two weeks; $150 per year). This authoritative newsletter is now published in a new format. It contains news and comment on international environmental issues.

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Project: Children-to-Children

"WHAT A TRAGEDY that a child, because of his disadvantages, just because he is born in a slum, has to prepare us to come to school and do our work for us. Where are the laws regulating child labour? Where are the literacy programmes meant for the urban poor? What happened to all those policies meant to develop rural and urban poor children? No wonder occasionally the United Nations has to declare a year as the International Year of the Child to make adults conscious of children. Is it possible — at least, during this year of the child, if not in the 1980s — to revive some of the programmes meant for poor children? We beg of you adults to provide what rightfully belongs to poor children."

The phrase, "you adults", reveals the source of the writers' strength and anger. The authors are children; in fact, eight students of Bishop Cotton Boys' School in Bangalore, in the middle of southern India.

They have written with the same compassion and energy about all aspects of life in the local slums. The remarks above were headed, 'Responsibilities'. They have also written about food, clothing, living conditions, health, sanitation and hygiene, education and recreation.

On recreation, they say: "To us, recreation means a lot of things ... a time for fun and enjoyment ... These children in the slums do have a lot of spare time but there is not anything to do. Recreation to them means boredom or day-dreaming."

The school children went into the slums — in most cases, for the first time ever — at the instigation of A.T. Balraj, the principal of the school, and A.V. Shanmugam of the Indian Institute of Management in Bangalore. Dr. Shanmugam describes it in these terms: "Both our educational system and urban family discussions somehow are not geared to educate school children beyond the academics and the world of entertainment or sports. What do our students know about the millions of children in our villages and slums?" Although teachers and welfare workers generated the project, it was entirely carried out, voluntarily, by boys of the 9th, 10th and 11th grades. The point of the project was that the children planned, implemented, monitored evaluated and reported it from beginning to end.

The children were astonished at the awful conditions of the slum children; and also their cheerfulness and friendliness. They have, the schoolchildren, discovered, "a better sense of hospitality and manners than most of us city dwellers." The schoolchildren acknowledge that their parents were apprehensive of the visits to the slums, and had described the slum children as cold, non-cooperative and hostile. After the visits, the schoolchildren said their parents were wrong.

These visits by two hundred children to hitherto forbidden areas of their city are a heartening example of activity that might well be called children-to-children. It is appropriate that it took place in the year that the UN has declared to be the International Year of the Child. Indeed, the project was consciously seen as part of this international event.

The entire project had a threefold objective. It involved 'conscientizing ourselves of our slum brethren's conditions of life; preparing ourselves as community health workers; and imparting non-formal education to the slum children." The wording sounds like a piece of jargon, a composition dictated by the teachers and expressing an atavistic sense of superiority. The children, too, were not above prejudice; they saw alcoholism as purely a slum problem; but these are details. The observations and comments that fill the report could not have been made by adults; they gain their force from having been made by children.

This force relates to the central fact that the research, discoveries and thinking were not the property of a few professional intellectuals and academics but became the shared consciousness of two hundred children and, presumably, to an extent, of their relatives and friends. If "the child is father of the man", then this children-to-children project has created one of the best resources of all.

The aims of "conscientizing ourselves" and working as "community health workers" seem to have been met fully. Again, the schoolchildren's own words are the most descriptive: "All you adults ever think of are adult-oriented programmes, slum clearances, etc ... If you adults do not have the time or patience or the grace to uplift the conditions of the child population in the slums then allow us children at least to do something. We can assure you adults that at our age, an age you have passed through already, we are more empathetic; and we have a conscience that is easily pricked. Give us a chance and we can develop programmes of action for the poor children."

The spirit of the message is clear. Efforts to help citizens should cater for both adults and children; and every action for children should truly reflect children's needs. That conclusion is fitting enough for the Year of the Child. But what is so powerful is that, in Bangalore, it was said by the children themselves. And in India there are nearly two hundred million children below the age of twelve. ■